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USDA Agricultural Projections to 2027

Interagency Agricultural Projections Committee

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Agricultural Marketing Service
Office of the Chief Economist
Office of Budget and Program Analysis
Risk Management Agency
Natural Resources Conservation Service
National Institute of Food and Agriculture

USDA Long-term Projections



Long-term Projections on the Internet

USDA Agricultural Projections to 2027 is available in both pdf and Microsoft Word formats at:

www.usda.gov/oce/commodity/projections/

and also at:

<https://www.ers.usda.gov/topics/farm-economy/agricultural-baseline-projections/>

Data from the new USDA long-term projections are available electronically at:

<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1192>

Information on USDA's long-term projections process may be found at:

www.ers.usda.gov/topics/farm-economy/agricultural-baseline-projections/usdas-long-term-projections-process.aspx

USDA Agricultural Projections to 2027. Office of the Chief Economist, World Agricultural Outlook Board, U.S. Department of Agriculture. Prepared by the Interagency Agricultural Projections Committee. Long-term Projections Report OCE-2018-1, 117 pp.

Abstract

This report provides projections for the U.S. agricultural sector to 2027. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector, such as farm income. The projections are based on specific assumptions about macroeconomic conditions, policy, weather, and international developments, with no domestic or external shocks to global agricultural markets. The Agricultural Act of 2014 is assumed to remain in effect through the projection period. The projections are one representative scenario for the agricultural sector for the next decade and reflect a composite of model results and judgment-based analyses. The projections in this report were prepared during October 2017 through January 2018 and are based on conditions as of the November 2017 *World Agricultural Supply and Demand Estimates* (WASDE) report.

Over the next several years, the agricultural sector continues to adjust to lower prices for most farm commodities. Planted acreage drops slightly despite continued low energy costs. However, marked shifts occur – most notably strong global demand for soybeans is expected to induce soybean plantings that exceed corn acreage. Lower feed costs and continued strong global demand provide economic incentives for expansion in the livestock sector. Long-run developments for global agriculture reflect steady world economic growth and continued but slower global demand growth for biofuel feedstocks, factors which combine to support longer run increases in disappearance, trade, and nominal prices of agricultural products. Although a relatively strong U.S. dollar is expected to dampen growth in U.S. agricultural exports, the United States remains competitive in global agricultural markets, in part due to efficiency and quality margins, and export values grow over the next ten years. Net farm income is expected to increase in 2018 followed by a drop, steadying out towards the middle of the decade and rising over the latter part of the projection period.

Keywords: Projections, crops, livestock, biofuel, ethanol, biodiesel, U.S. dollar value, crude oil prices, trade, farm income, U.S. Department of Agriculture, USDA

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USDA Long-term Projections: Background

USDA's long-term agricultural projections presented in this report are a departmental consensus on a long-run scenario for the agricultural sector. These projections provide a starting point for discussion of alternative outcomes for the sector.

The projections in this report were prepared during October 2017 through January 2018, with the Agricultural Act of 2014 assumed to remain in effect through the projection period. The scenario presented in this report is not a USDA forecast about the future. Instead, it is a conditional, long-run scenario about what would be expected to happen under a continuation of current farm legislation and other specific assumptions. Critical long term assumptions are made for U.S. and international macroeconomic conditions, U.S. and foreign agricultural and trade policies, and growth rates of agricultural productivity in the United States and abroad. The report assumes that there are no domestic or external shocks that would affect global agricultural supply and demand. Normal weather is assumed. Changes in any of these assumptions can significantly affect the projections, and actual conditions that emerge will alter the outcomes.

The report uses as a starting point the short-term projections from the November 2017 *World Agricultural Supply and Demand Estimates* report. The macroeconomic assumptions were completed in October 2017.

The projections analysis was conducted by interagency committees in USDA and reflects a composite of model results and judgment-based analyses. The Economic Research Service had the lead role in preparing the departmental report. The projections and the report were reviewed and cleared by the Interagency Agricultural Projections Committee, chaired by the World Agricultural Outlook Board. USDA participants in the projections analysis and review include the World Agricultural Outlook Board; the Economic Research Service; the Farm Service Agency; the Foreign Agricultural Service; the Agricultural Marketing Service; the Office of the Chief Economist; the Office of Budget and Program Analysis; the Risk Management Agency; the Natural Resources Conservation Service; and the National Institute of Food and Agriculture.

USDA Contacts for Long-term Projections

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The report coordinators, on behalf of the Interagency Agricultural Projections Committee, thank the many analysts in different agencies of USDA for their contributions to the long-term projections analysis and to the preparation and review of this report. Without their help, this report would not be possible.

USDA Agricultural Projections to 2027

Interagency Agricultural Projections Committee

Introduction and Projections Overview

This report provides long-run projections for the agricultural sector to 2027. Major forces and uncertainties affecting future agricultural markets are discussed, such as prospects for long-term global economic growth and population trends. Projections cover production and consumption for agricultural commodities, global agricultural trade and U.S. exports, commodity prices, and aggregate indicators of the sector, such as farm income.

The projections are a conditional scenario based on specific assumptions about the macroeconomy, agricultural and trade policies, the weather, and international developments. The report assumes that there are no domestic or external shocks that would affect global agricultural markets. Normal weather with trend crop production yields is generally assumed. Provisions of the Agricultural Act of 2014 are assumed to remain in effect through the projection period. Thus, the projections are not intended to be a forecast of what the future will be, but instead are a description of what would be expected to happen under these very specific assumptions and circumstances. As such, the projections provide a neutral reference scenario that can serve as a point of departure for discussion of alternative farm-sector outcomes that could result under different domestic or international conditions.

The projections in this report were prepared during October 2017 through January 2018 and reflect a composite of model results and judgment-based analyses. The November 2017 *World Agricultural Supply and Demand Estimates* report contains the short-term projections used as a starting point for this report. The macroeconomic assumptions were completed in October 2017.

Over the next several years, the agricultural sector will continue to adjust to lower prices for most farm commodities and relatively low energy prices. Despite high carryout in many years, strong global demand will provide incentives to retain relatively stable planted acreage while inducing some shifts in plantings. For the first time, U.S. soybean plantings are expected to exceed corn plantings. In the livestock sector, robust demand will provide economic incentives for continued expansion.

Developments for global agriculture and U.S. trade reflect income growth in developing countries and a relatively strong U.S. dollar over the coming decade, with steady world economic growth and continued but slower global demand growth for biofuel feedstocks expected throughout. Those factors combine to support longer run increases in the disappearance, trade, and nominal prices of agricultural products. Global trade competition will continue to be strong and the higher valued U.S. dollar will somewhat dampen growth in U.S. agricultural exports. Nonetheless, the United States remains competitive in global agricultural markets, in part due to efficiencies and quality. U.S. export values grow over the next ten years while net cash income and net farm income start to increase again, following the decreases over the past few years.

Key Assumptions and Implications

Major assumptions underlying the projections and selected implications include:

Macroeconomic Overview

- Global macroeconomic conditions reflect continued strong economic growth in developing countries, a relatively strong dollar, and near-term low oil prices, which are expected to rise in the longer term.

Economic Growth

- Global real economic growth is projected to average less than 3 percent annually over the next decade. The United States is expected to be one of the leaders of the developed countries, averaging just over 2.1 percent annual growth, while developed countries as a group are expected to experience an average of 1.7 percent annual growth. Meanwhile, growth in the developing countries begins to rise from 2016's low of 3.7 percent – averaging almost 4.6 percent annual growth.
- The strongest growth remains in developing countries. Although China's economy slows as it transitions to a more consumer-oriented economy, average annual growth still averages over 5.5 percent. India is expected to remain among the world's fastest growing economies, averaging almost 7.6 percent. Asia in general is expected to have strong economic growth – particularly in the Southeast Asian countries. Meanwhile, Africa and the Middle East are anticipated to maintain growth rates near 3.5 percent and Latin America is expected to rebound in the near term, growing nearly 3 percent per year. This growth is marked by recovery in Brazil from its recent deep recession and Argentina's expected higher than long-term growth prospects. Strong U.S. expected growth provides robust export markets for Mexico, while Venezuela likely remains mired in a deep recession in the near term.
- Relatively weak long-run real growth is expected for the developed countries, especially in Japan and the European Union (EU). Japan's economy continues the slow growth since the 1990s, in part due to a shrinking working age population. EU growth continues to be constrained by structural rigidities, including inflexible labor laws and an expensive social security system.
- While the U.S. will be among the growth leaders of the developed world, stronger growth in developing economies will cause the U.S. share of global gross domestic product (GDP) to fall slowly but steadily over the next ten years.
- Regional tensions persist within Russia and Ukraine, limiting their growth. Growth prospects for the Former Soviet Union (FSU) region have been cut in half from recent history, down to 1.9 percent from the 4.5 percent growth averaged over 2000-15.
- Steady global economic growth supports longer-term gains in world food demand, global agricultural trade, and U.S. agricultural exports. Economic growth in developing countries is especially important because food consumption and feed use are particularly responsive to income growth in those countries, with movement away from traditional staple foods and towards increased diet diversification, including greater protein consumption.

Population

- Economic growth over the next decade contributes to the continued slowing of population gains around the world as birth rates decline. Growth in global population is projected to remain at less than one percent per year compared with an average annual rate of 1.2 percent from 2001 to 2010.
- Population growth rates in most developing countries are projected to average roughly 1.1 percent per year, well below previous decades, although the average remains above the rest of the world. As a consequence, the share of world population accounted for by developing countries continues to rise, accounting for 83 percent in 2026.
- Population gains in developing countries along with economic growth and expansion of the middle class are particularly important for the projected growth in global food demand. Populations in developing countries, in contrast to those in more-developed countries, tend to be both younger and, with economic growth, urbanizing more, factors that generally lead to the expansion and diversification of food consumption.

Value of the U.S. Dollar

- Following a 10-year depreciation from 2002 to 2011, the U.S. dollar has appreciated, with a sharp increase in 2015 and strong growth again in 2016. The dollar remained steady in 2017 and is expected to depreciate in 2018 before remaining relatively steady and strong through the remainder of the decade.
- A strong U.S. dollar will keep the relative price of U.S. exports high, thereby dampening export growth. Although trade competition will continue to be strong, the United States is projected to remain competitive in global agricultural markets. While exports are projected to rise, contributing to long-term increases in cash receipts for U.S. farmers, the United States is still expected to lose global market share due to increased global competition.

Energy Prices

- Demand for petroleum is growing fastest in non-OECD countries – in particular, China, India, and Saudi Arabia – as increasing populations and expanding manufacturing sectors translate to increased energy demand.
- As global economic activity improves, crude oil prices are assumed to increase from their recent lows. Nonetheless, the U.S. nominal refiner acquisition cost for crude oil imports is expected to rise to only about \$80 per barrel by the end of the projection period due to non-OPEC suppliers being able to respond quickly to changing market conditions.
- In the United States, crude oil production is expected to increase more than any other country to a new record high in 2018, with the bulk of production coming from tight oil.
- The longer term outlook depends heavily on prices, since shale oil costs more to extract than most traditional oil sources, and more shale deposits will sit idle when oil prices are low. Additionally, large portions of the known formations have relatively little or no production history making it harder to gauge the extent of these oil resources.

U.S. Agricultural Policy

- The 2014 Farm Act is assumed to be in effect through the projection period.
- Acreage enrolled in the Conservation Reserve Program (CRP) is assumed at levels at or just below its legislated maximum of 24 million acres under the 2014 Farm Act.
- Recent reductions in crop prices led to higher direct Government payments to farmers through 2017, mostly reflecting payments under the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs of the 2014 Farm Act. Beyond 2017, direct Government payments are lower and below the average of 2001-10 as lower expected prices reduce ARC payments. The assumption that many producers will likely switch to PLC from the ARC program in the 2019/20 crop year will keep government payments higher than they otherwise would be.

U.S. Biofuels

- Biofuel projections were completed before the final renewable fuel standards for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel for 2018 were announced by the U.S. Environmental Protection Agency (EPA) on November 30, 2017. Projections are based on EPA's proposed rule for these requirements from July 5, 2017. Note, however, that the difference is minimal, so likely had no bearing on the outcome.
- Almost all U.S. production of ethanol uses corn as a feedstock. Ethanol production is projected to increase in the beginning of the projection period, afterwards declining through the rest of the decade. Even with the U.S. ethanol production decline, demand for corn to produce ethanol continues to have a strong presence in the sector, accounting for over 35 percent of total U.S. corn use throughout the projection period.
- Projected declines in overall gasoline consumption in the United States and the 10-percent ethanol "blend wall" are assumed to constrain domestic ethanol production over the next decade. Most gasoline in the United States continues to be a 10-percent ethanol blend (E10). Infrastructure, geographical, and other constraints severely limit growth in the E15 (15-percent ethanol blend) market. The E85 (85-percent ethanol blend) market remains very small. Moderate gains are projected for U.S. ethanol exports, but these are not large enough to offset declining ethanol use in the domestic market as gasoline consumption falls.
- The biomass-based diesel use volume requirement, as administered by the EPA, was increased by EPA to rise to 2.1 billion gallons by 2018. Projections assume this volume requirement to remain at this level throughout the remainder of the projection period. However, some production of biodiesel and renewable diesel above the biomass-based diesel volume requirement is assumed will continue to meet a portion of the nonspecific advanced biofuel requirement.
- Soybean oil used to produce biodiesel in the United States is projected to support the annual production of over 1 billion gallons of biodiesel annually by the second half of the decade.

Other feedstocks used to produce biomass-based diesel include corn oil extracted from distillers' grains, other first-use vegetable oils, animal fats, and recycled (used) cooking oil.

International Policy

- Agricultural trade projections assume current trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place in November 2017.
- The projections reflect the effects of new policies implemented by Argentina in recent years. These policies include reducing or removing export taxes on various agricultural commodities, eliminating the export permit system for grains and oilseeds, and lifting currency controls. These policies affect the agricultural sector in the country as well as global agricultural markets.
- The ban Russia imposed on agricultural imports from Western countries (such as the EU, United States, and Canada) was implemented in August 2014 and has been renewed each year since then. It is assumed that Russia will continue to use policies to stimulate its livestock production and to limit its reliance on imports.

International Biofuels

- Global production of biofuel is projected to continue to increase during the next decade, although at a significantly slower pace than over the last half decade. This slowdown in part reflects lower crude oil prices, some decline in U.S. fuel ethanol use, the reluctance of many countries with biofuel programs to push use mandates higher when domestic feedstock is inadequate, and the low likelihood that the remaining largest transport fuel consuming countries with no biofuels programs will introduce programs over the next decade. Most notably, these countries include Russia, Saudi Arabia, and Iran for all biofuels, and Indonesia and Malaysia for ethanol.
- The three largest biofuel producers remain the United States, Brazil, and the EU. Also among the largest producers, China, Argentina, Thailand, Canada, and Indonesia grow but remain considerably smaller than the top three. The United States, Brazil, Canada, the EU and Japan remain the world's largest importers of biofuels over the next decade. The United States, Argentina, Brazil, and Singapore, followed by Indonesia and Malaysia are the largest biofuel exporters. It is assumed that the recent "E10 by 2020" use goal announced by China in 2017 will fall far short throughout the baseline projection period.

Prices

- Prices for most crops remain below their 10-year averages as U.S. and global production responded to the higher prices of the recent past. Prices are expected to be lowest in the beginning of the projection period and thereafter rise moderately, reflecting long-term growth in global demand for agricultural products and continued biofuel feedstock demand.
- Reduced feed costs over the past several years have improved livestock-sector net returns, providing economic incentives for expansion. Additionally, U.S. turkey production and egg production rebound from 2015 reductions that were largely due to effects of highly

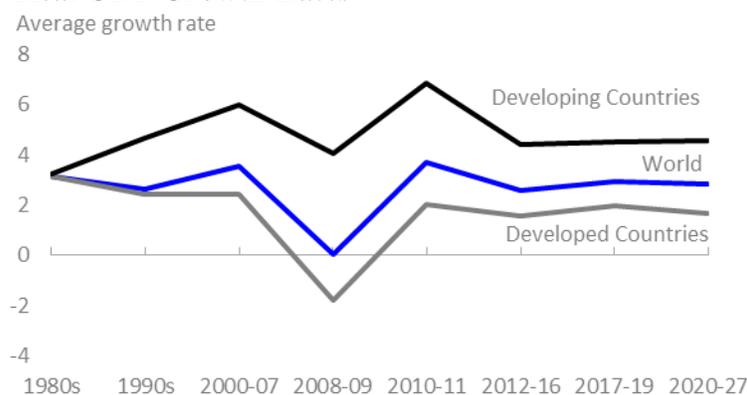
pathogenic avian influenza (HPAI). Nominal prices for beef cattle are projected to decline through most of the next decade as production rises. Robust demand and low feed costs allow nominal prices for hogs, broilers, turkeys, and eggs to increase after an initial drop in the beginning of the decade. Nominal farm-level milk prices fluctuate through the first half of the decade, followed by increasing prices over the remaining years.

- Lower farm commodity prices result in falling livestock cash receipts throughout the first half of the decade. Crop cash receipts, however, are expected to grow throughout the decade. After 2018, gross cash income begins to rise at almost 0.7 percent per year on average. Net farm income keeps pace, growing at nearly 0.6 percent per year with a general decline through 2022 followed by growth to end the decade on a stronger footing.

Macroeconomic Assumptions

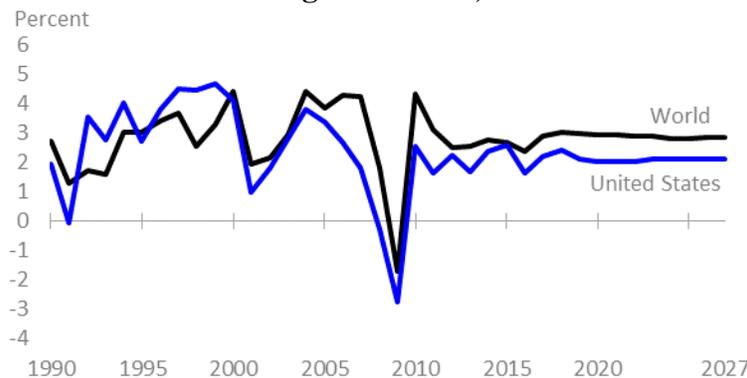
The macroeconomic assumptions underlying USDA’s long-term projections show strong global growth in the near term, led by an uptick in developed country growth and sustained growth in developing countries. Real global gross domestic product (GDP), weighted by market exchange rates, is projected to increase at an average annual rate of 3 percent over 2017-19. This is the strongest global growth since the post-financial crisis rebound in 2010-11 and has generated external demand improvements, exemplified by a strong resurgence in global trade growth. International trade grew by an estimated 6 percent in 2017 after growing at less than 2 percent in 2015 and 2016. Trade growth is expected to continue outpacing the sluggish rates of the post-crisis years providing a healthy environment for exporters and consumers.

Real GDP Growth Rates



Long-term global trend growth is expected to be slower than the rates that prevailed during much of the early 2000’s as the maturing of China and other emerging markets implies slower developing country growth rates and aging populations lower potential growth in several large developed and developing economies. Real global GDP is projected to grow at an average rate of 2.9 percent per year over the projection period, below the long-term, pre financial crisis (1980-2007) average of 3.3 percent, although similar to growth rates prevailing in the 1980’s and 1990’s.

U.S. and world GDP growth rates, 1990-2027



Near-term GDP growth in the United States and most other developed countries is expected to exceed long-term trend rates. Labor markets and credit conditions are anticipated to improve and maintain strength that has been building in recent years, supporting strong consumer demand and

increased business investment. Monetary policy is expected to remain accommodative in the near term, with interest rates rising slowly and central banks gradually phasing out the stimulus measures implemented during the global financial crisis and European debt crisis. Lower long-term trend growth rates generally reflect slowing labor force and productivity growth throughout the developed countries. Demographic changes drive the bulk of the slowdown in labor force growth, although immigration mitigates this trend in some countries.

Rising commodity prices and an improved external environment are likewise expected to support strong near-term growth in most developing country regions. However, growth rates in China and other large developing countries are projected to be significantly slower relative to the historic highs that prevailed from 2000-2014. Developing country growth is nevertheless expected to continue outpacing that of developed countries as they continue to exploit gains from investments in basic physical and economic infrastructure and improvements in the allocation of resources.

The U.S. dollar is expected to weaken in 2018 as currencies of many of its trading partners regain some of the substantial value lost during 2015-16. However, the dollar is expected to remain relatively strong, staying above 2010-2015 levels, supported by the health and safety of the economy and prospects for fiscal stimulus, with a slight weakening trend over the projection period.¹ The pace of monetary normalization relative to other developed countries is also expected to contribute to dollar strength. Oil prices are projected to rise slowly to nearly \$80 per barrel, although there is significant uncertainty, particularly on global supply factors.

Agricultural Implications

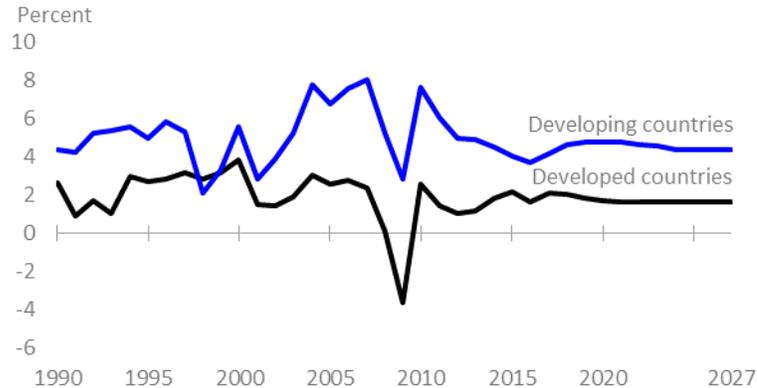
An improved external environment, including the rebound in trade, supports growing global demand for food and agricultural products, and the United States will remain among the most competitive agricultural exporters. However, slowing long-run economic growth rates and a relatively strong dollar are expected to weigh on growth in U.S. agricultural exports over the projection period. The projections suggest that developing countries, particularly in Asia, will continue to account for most of the growth in U.S. agricultural exports due to their economic and population growth which boosts global demand as incomes rise. Improved economic conditions in developed country markets will provide additional stimulus to global demand.

- The U.S. dollar is generally expected to weaken, particularly in 2018 as strong growth in several large countries bolsters their currencies. However, the dollar is expected to remain strong relative to its value earlier in the decade throughout the projection period. A strong dollar is a damper on U.S. agricultural exports over the projection period as it increases the relative price of U.S. goods. The magnitude of the strong currency disadvantage will generally be more significant for bulk commodities. Product quality and market efficiency will become more important sources of U.S. export competitiveness while the strong dollar persists.
- Although developing country growth rates are expected to decline on average relative to the historic highs of 2000-10, incomes will continue to rise. In this process, diets become more diversified and meat, dairy, and processed foods consumption increases. This increases import demand for feed grains and high-value food products.

¹ These projections do not include the tax law revisions included in the Tax Cuts and Jobs Act of December 2017.

- Low energy prices in the early years of the projection period will continue to restrain costs of production for farmers and ranchers in the United States and elsewhere. In contrast, the expected higher interest rate environment increases borrowing costs, and may make it more difficult for farmers to qualify for operating loans.

Gross domestic product (GDP) growth: Developing countries are projected to grow at more than double the rate of developed countries

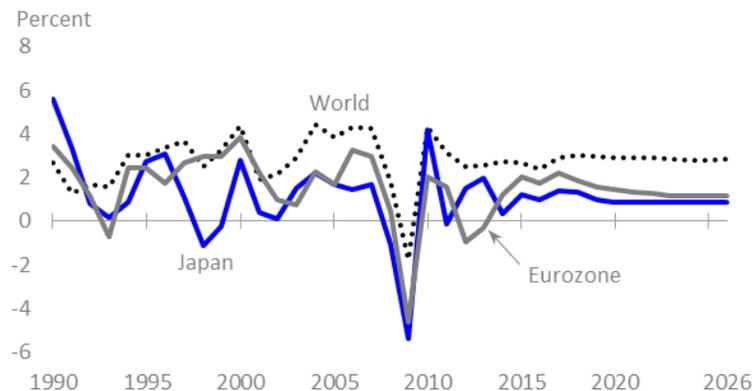


Economic growth in developing countries is projected to average 4.6 percent annually during the projection period. While this represents a growth slowdown compared to recent history, it remains more than twice the projected growth rate of developed countries. As a result, developing countries' share of global real GDP is projected to rise to 45 percent in 2027 from 38 percent in 2018. China, India and Southeast Asian countries are expected to account for the bulk of this increase. The strongest developing country growth is projected among Asian countries at 5.4 percent, followed by African countries at 3.5 percent and Latin American countries at 2.9 percent. The region encompassing the Former Soviet Union (FSU) is forecast to grow most slowly at an average of 1.9 percent per year.

- Despite a slowdown relative to 2000-10, continued strong GDP growth in developing Asia makes this region an increasingly important part of the global economy. Its share of world GDP is projected to rise from 23.0 to 29.3 percent over the projection period. Near term growth is expected to be above the long-term trend. An exception to this general pattern is India, where economic growth is projected to exceed that of recent years, outpacing China with an average growth rate of 7.6 percent per year. This very strong growth is expected to be supported by gains from economic reforms, including a reshaping of the taxation system, and increased investment in infrastructure.
- China's economic growth is projected to slow from historical highs near 10 percent in 2000-10 to an average of 5.5 percent per year over the next decade. Nevertheless, China is expected to account for almost 17 percent of the world economy in 2027, up from about 13 percent in 2017. Expectations of slower growth are due in large part to the process of structural change as China moves to a more domestic consumer-oriented and market-driven economy. However, high levels of debt and industrial overcapacity present challenges for a smooth transition.

- Latin American GDP growth is projected to rebound in the near term after a recent period marked by very slow growth and recession in some of its largest economies. Growth in Argentina is expected to be above its long-term trend throughout the next several years as economic reforms are implemented. Brazil's economy is projected to grow at a low rate in 2018 as it recovers from deep recession amid a complicated political environment. Growth in both countries is expected to be slow relative to other developing countries due to difficult economic challenges. Meanwhile, Mexico is expected to benefit from strong growth in its northern neighbor and primary export market, with its own GDP growth in 2017 and 2018 slightly above its long-run trend. Without significant policy change, Venezuela will likely remain mired in a deep recession in the near term.
- Economic growth in Sub-Saharan Africa, the poorest region in the world, is projected to average 3.5 percent per year. This growth rate, although well below the 6 percent average during 2000-07, is nevertheless higher than the long-term historical trend rate of roughly 3 percent. Two large Sub-Saharan African countries, South Africa and Nigeria, face significant growth slowdowns relative to the early 2000's due to political and economic challenges. Nevertheless, growth on the continent is generally expected to continue raising standards of living and mitigating increases in the poverty rate, although low per capita GDP levels imply significant poverty will persist. A positive regional highlight, growth in the West African Community outside of Nigeria is expected to average close to 5.7 percent in the near term, above its long-term trend rate of roughly 4 percent.
- The Middle East and North Africa are also expected to grow at an average rate near 3.5 percent over the projection period. Improvements in commodity prices are driving slightly higher near-term growth in many countries. However, others are experiencing political instability and violence that has brought economic activity to a virtual standstill, and that uncertainty affects prospects in the neighboring countries.
- Growth prospects for the FSU region have been cut by more than half from recent history—down to 1.9 percent from a 4.5 percent average over 2000-15. While the region will benefit from increases in commodity prices, growth will remain depressed in Russia and Ukraine as regional tensions persist.

Growth in gross domestic product (GDP) for developed countries, European Union, and Japan

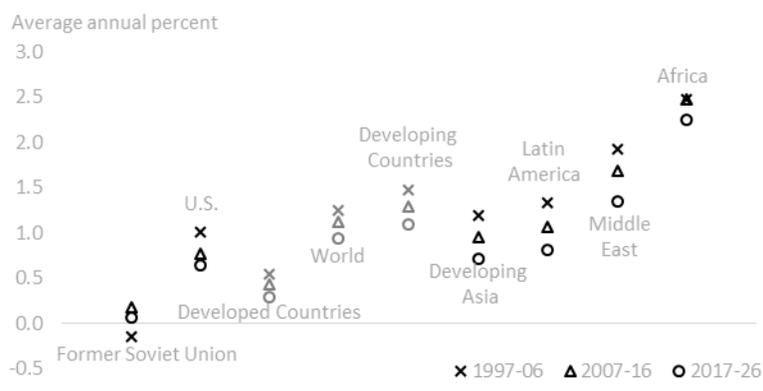


Developed country growth is expected to be robust in the near term with stronger than anticipated 2017 growth generating an improved external environment for exporters and strong fundamentals suggesting continued above-trend growth in 2018 and beyond. The United States remains a growth leader, but expected economic growth in the Eurozone was surprisingly strong in 2017 and Japanese growth likewise exceeded expectations. However, long-term trend growth in developed countries is expected to be lower than in the past, as aging populations imply slower labor force growth and productivity growth rates have also declined.

- U.S. economic growth is expected to continue to outpace most of the rest of the developed world throughout the projection period. Domestic economic fundamentals are healthy and the improved international environment combined with some relief from a strong dollar will boost export demand. These conditions will support solid economic growth, particularly in the near term. Long-term growth is projected to be slower than the historical average as labor force and productivity growth are expected to slow. Inflation is also expected to remain at just over 2 percent in the United States. Together, these conditions underlie higher projected interest rates over the next ten years.
- Expected 2017 economic growth in the Eurozone – which consists of the 19 European Union members (out of 28) which have adopted the euro as the official currency – at 2.2 percent defied earlier predictions of continued stagnation and was the strongest growth since before the 2008-2011 global financial crisis. Enthusiastic consumer and business sentiment support projections for sustained growth above the long-term trend over the next several years.
- Although Japan is expected to benefit from the current positive external economic environment with near term growth rates above the long-term average, the projections assume the slow growth that Japan has experienced since the 1990s will continue throughout the decade, as the working age population continues to fall. Average growth is projected to be less than 1 percent per year over the next decade. Inflation is expected to remain quite low, but Japan is expected to avoid further deflation.

- The Canadian economy is projected to undergo a substantial recovery in 2017 with growth nearing 3 percent as the low commodity prices that weighed on its economy strengthen and investment shifts away from energy to other sectors. Like other developed countries, strong growth is expected to be sustained in the near term, moving to a long-run growth rate of 2 percent thereafter.

Average annual population growth rates by decade show declines over time, with the exception of the Former Soviet Union



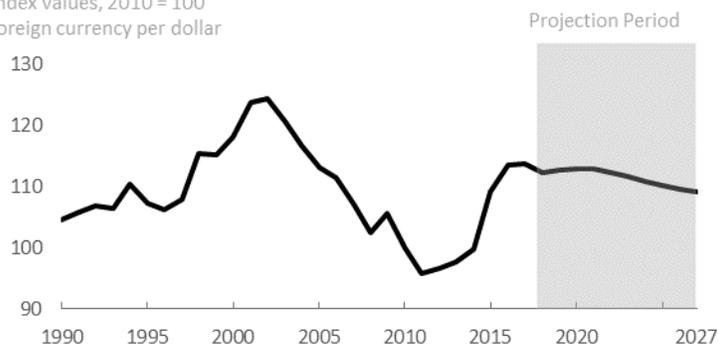
World population growth is projected to continue slowing over the next decade, rising just under 1 percent per year for the projection period compared to an annual rate of 1.4 percent over the decade 1991-2000 and 1.2 percent in 2001-10.

- Developed countries have very low projected population growth rates, at 0.3 percent over 2017-26. U.S. population growth is projected to exceed the developed country average at about 0.7 percent, in part reflecting the importance of immigration. Only small population increases are expected for the European Union, averaging just over 0.1 percent over the next decade. In contrast, the population in Japan is projected to continue falling at around 0.3 percent per year.
- Population growth rates in developing countries will likely be sharply lower than in previous decades, but remain above those in the rest of the world at about 1.1 percent per year over the projection period. As a result, developing countries' share of global population is projected to increase to 83 percent by 2027, compared to 79 percent in 2000.
- Sub-Saharan Africa maintains the highest population growth rate of any region at 2.4 percent per year. Although population growth has fallen compared to historical experience, the decline is modest relative to those seen in Latin America and Asia. Notable declines in population growth include Brazil, where the population is expected to grow by 0.6 percent per year from 2018-27, compared to an average of 1.6 percent in 1991-2000. Similarly, Indonesia's population is expected to grow by 0.7 percent per year from 2018-27, compared to 1.7 percent in 1991-2000.
- China and India together accounted for 36 percent of the world's 2017 population. Population growth in both countries has declined significantly relative to 1991-2000. China's population is expected to grow at only 0.2 percent per year over the projection period, well below the global average and slower than the 1.0 percent average growth in 1991-2000. As such, its share of the global population is projected to decline. Population growth in India is likewise expected to almost halve, at 1.0 percent per year over 2018-27 compared to 1.9 percent per year over 1991-2000.

- Population growth in the FSU is expected to average less than 0.1 percent per year over the projection period. The Russian and Ukrainian populations are expected to shrink, with average growth rates of -0.2 and -0.4 percent, respectively. Continued emigration, low birth rates and relatively high mortality rates all contribute to falling population in this region.
- Population growth in the Middle East is forecast to grow above the world average at 1.4 percent. Migration within and outside the region is expected to continue as long as violence and political instability persist in countries such as Syria, Iraq, and Yemen, among others.

U.S. agricultural trade-weighted dollar

Index values, 2010 = 100
foreign currency per dollar

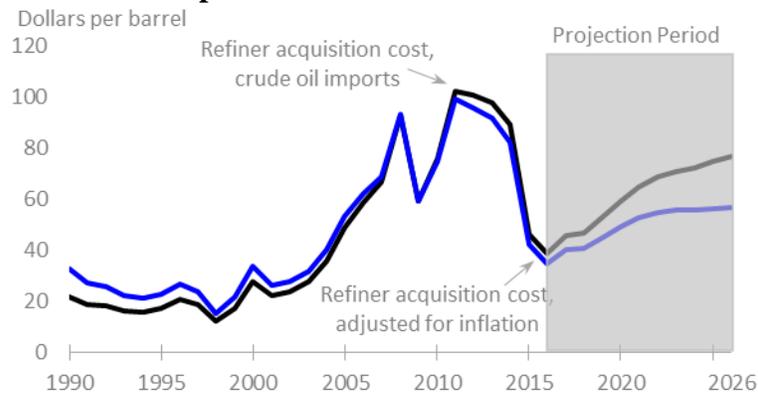


The average value of the U.S. dollar in 2017 was virtually unchanged relative to the 2016 average. The agricultural trade-weighted real dollar exchange rate appreciated by less than 0.2 percent in 2017. While the dollar is expected to remain strong relative to the early years of the decade throughout the projection period, it is expected to weaken somewhat in 2018 as the currencies of many key trading partners continue to regain value lost during the dramatic dollar strengthening in 2015. Expectations for a strong dollar are supported primarily by the optimistic outlook for U.S. economic growth, but also by anticipated increases in interest rates while monetary policy elsewhere remains more accommodative.

- While the dollar strengthened very slightly on average, it weakened relative to many developed country currencies, including a nearly 0.5 percent decline in real terms against the euro, a 2.4 percent decline relative to the Canadian dollar, and a 2.9 percent decline relative to the Australian dollar. The exception was a 3.7 percent appreciation of the dollar relative to the Japanese yen, against which the dollar lost nearly 9 percent of its value in 2016 when the yen received favor as a safe alternative to the dollar while Brexit and other uncertainty in the European Union economy made the euro less attractive. The projections assume substantial further weakening of the dollar relative to the euro in 2018, reflecting optimism about European economic performance, then leveling off during the remainder of the projection period. Exchange rates with other developed countries are generally expected to remain stable.
- The dollar generally appreciated modestly in real terms in most developing country regions in 2017, with country-specific factors producing a mix of exchange rate movements. In 2017, the projections assume the dollar value fell by 1.7 percent on average relative to Latin American currencies; increased by 2.4 percent relative to Southeast Asian currencies and increased by 3.9 percent relative to Middle Eastern currencies. The dollar is assumed to have appreciated by more than 13.5 percent relative to African currencies on average, but this measurement is strongly influenced by a large devaluation implemented by the Egyptian government in March. On average, the real exchange rate is expected to trend toward modest depreciation in developing country regions through the remainder of the projection period. Country- and region-specific economic conditions affect the expected magnitude and timing of currency movements.

- Latin American currencies against which the dollar strengthened dramatically during 2015 are assumed to regain substantial value in 2017 as economic growth revives in leading economies. The projections assume some further dollar weakening in 2018 and generally steady real exchange rates thereafter. In Mexico, projected real dollar weakening of roughly 3 percent in 2017 is expected to be largely matched in 2018, followed by very slow appreciation. In Argentina, the dollar's value is expected to have fallen by roughly 10 percent in real terms in 2017 as the peso regains value lost in 2016 as Argentina undertook major economic reforms. The Argentine peso is expected to continue gaining value against the dollar throughout the projection period as its economy gains strength. The projections assume dollar depreciation of more than 8 percent in real terms against the Brazilian real in 2017 as the economy shakes off recession and recovers some of the nearly 30 percent of its value lost during 2015.
- It is expected that the dollar will have appreciated by roughly 3 percent in real terms relative to the Chinese yuan in 2017. Dollar appreciation in 2016 and 2017 has occurred in spite of Chinese government intervention intended to mitigate losses in the yuan's value. The projections assume that after a modest depreciation in 2018, structural change and its accompanying slower Chinese growth rates will imply a generally strengthening dollar in the near term, followed by a trend toward depreciation as adjustment takes hold.
- The dollar is expected to have depreciated by more than 10 percent in real terms against a trade-weighted basket of currencies in the FSU region in 2017. After dramatic strengthening in 2015, the trend toward a weaker dollar that began in 2016 continued. The dollar's real value is expected to have fallen nearly 14 percent with respect to the Russian ruble and more than 5 percent against the Ukraine hryvnia in 2017 as these economies benefited from improving commodity prices. These currencies are expected to continue to slowly regain value against the dollar over the projection period.

U.S. crude oil prices



The projections reflect continued low crude oil prices in the near term, rising to roughly \$80 per barrel in nominal terms by the end of the projection period.

- Demand for petroleum is growing fastest in non-OECD countries – in particular, China, India, and Saudi Arabia – as increasing populations and expanding manufacturing sectors translate to increased energy demand. In OECD countries, oil demand is expected to remain relatively constant as increased energy efficiency offsets growth in transportation and industrial activity.
- Large excess supplies in OPEC countries have kept oil prices low in recent years. However, OPEC supply management strategies and strong U.S. refinery demand coupled with slowing U.S. exploration and investment have caused oil prices to begin rising. Over time, it is expected that global economic growth will contribute to increased demand for oil and put upward pressure on prices.
- When oil prices rise, exploration becomes more attractive, and non-OPEC suppliers can respond relatively quickly to changing market conditions, which puts a price ceiling on how high oil prices are expected to rise. In the U.S., nontraditional production, notably from shale, is beginning to dominate. However, the long-term viability of such production remains uncertain.

Table 1. U.S. macroeconomic assumptions

Item	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Gross Domestic Product												
Nominal, billion dollars	18,569	19,321	20,174	20,991	21,834	22,723	23,645	24,627	25,647	26,710	27,816	28,968
Real, billion 2009 chain-weighted dollars	16,662	17,029	17,437	17,804	18,160	18,523	18,893	19,290	19,695	20,109	20,531	20,962
percent change	1.6	2.2	2.4	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Disposable personal income												
Nominal, billion dollars	14,026	14,559	15,263	15,860	16,499	17,172	17,870	18,614	19,386	20,191	21,029	21,901
percent change	3.7	3.8	4.8	3.9	4.0	4.1	4.1	4.2	4.2	4.2	4.2	4.2
Nominal per capita, dollars	43,371	44,711	46,557	48,053	49,655	51,340	53,082	54,933	56,849	58,835	60,896	63,035
percent change	3.0	3.1	4.1	3.2	3.3	3.4	3.4	3.5	3.5	3.5	3.5	3.5
Real, billion 2009 chain-weighted dollars	12,667	12,920	13,291	13,557	13,835	14,118	14,408	14,717	15,034	15,357	15,687	16,025
percent change	2.6	2.0	2.9	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2
Real per capita, 2009 chained dollars	39,170	39,679	40,542	41,075	41,638	42,211	42,796	43,434	44,086	44,750	45,428	46,120
percent change	1.9	1.3	2.2	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Personal consumption expenditures												
Real, billion 2009 chain-weighted dollars	11,522	11,822	12,121	12,369	12,629	12,894	13,165	13,448	13,737	14,032	14,334	14,642
percent change	2.7	2.6	2.5	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2
Inflation measures												
GDP chained price index, 2009=100	111.5	113.5	115.7	117.9	120.2	122.7	125.2	127.7	130.2	132.8	135.5	138.2
percent change	1.3	1.8	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CPI-U, 1982-84=100	240.0	245.0	250.4	256.2	262.1	268.1	274.3	280.6	287.0	293.6	300.4	307.3
percent change	1.3	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
PPI, finished goods 1982=100	191.9	197.2	201.1	205.0	209.1	213.3	217.8	222.4	227.2	232.2	237.4	242.6
percent change	-1.0	2.8	2.0	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2
PPI, crude goods 1982=100	173.4	192.2	196.8	220.5	248.3	272.3	287.9	297.5	303.9	313.8	322.1	325.8
percent change	-8.3	10.9	2.4	12.1	12.6	9.7	5.8	3.3	2.2	3.2	2.7	1.1
Crude oil price, \$/barrel												
EIA refiner acquisition cost, imports	38.8	45.9	46.9	52.6	59.2	65.0	68.7	71.0	72.5	74.9	76.9	77.7
percent change	-16.5	18.4	2.4	12.1	12.6	9.7	5.8	3.3	2.2	3.2	2.7	1.1
Real 2009 chain-weighted dollars	34.8	40.4	40.6	44.6	49.3	53.0	54.9	55.6	55.7	56.4	56.7	56.2
percent change	-17.5	16.3	0.4	10.0	10.4	7.5	3.7	1.3	0.2	1.2	0.6	-0.8
Labor compensation per hour nonfarm business, 2005=100												
percent change	117.3	120.8	125.0	129.2	133.4	137.5	141.6	145.9	150.2	154.7	159.4	164.2
percent change	2.4	3.0	3.4	3.4	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0
Interest rates, percent												
3-month Treasury bills	0.30	0.90	1.5	2.2	2.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Bank prime rate	3.50	4.00	4.4	5.1	5.8	5.9	6.0	6.0	6.0	6.0	6.0	6.0
10-year Treasury bonds	1.80	2.40	2.8	3.2	3.5	3.6	3.7	3.7	3.7	3.7	3.7	3.7
Labor and population												
Civilian unemployment rate, percent	4.9	4.4	4.2	4.5	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.7
Nonfarm payroll employees, millions	144.3	146.5	148.1	148.7	148.9	149.3	149.9	150.7	151.5	152.3	153.1	153.9
percent change	1.7	1.5	1.1	0.4	0.1	0.2	0.4	0.5	0.5	0.5	0.5	0.5
Total population, millions	323.4	325.6	327.8	330.0	332.3	334.5	336.7	338.8	341.0	343.2	345.3	347.5
percent change	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6

Domestic macroeconomic assumptions were completed in October 2017.

CPI-U is the consumer price index for all urban consumers. PPI is the producer price index. EIA is the Energy Information Administration, U.S. Department of Energy.

Table 2. Global real GDP growth assumptions

Region/country	GDP, 2017	GDP share		Per capita							Average		
		2015-17	Per capita	2016	2017	2018	2019	2020	2021	1998-2007	2008-2017	2018-2027	
	<i>Bil. 2010</i>		<i>2010</i>										
	<i>dollars</i>	<i>Percent</i>	<i>dollars</i>										
				<i>Percent change in real GDP</i>									
World	78,893	100.0	10,702	2.4	2.9	3.0	3.0	2.9	2.9	3.4	2.3	2.9	
North America	19,112	24.4	52,908	1.6	2.3	2.4	2.1	2.0	2.0	3.1	1.4	2.1	
Canada	1,876	2.4	52,648	1.5	2.9	2.4	2.3	2.0	2.0	3.2	1.6	2.1	
United States	17,237	22.0	52,936	1.6	2.2	2.4	2.1	2.0	2.0	3.0	1.4	2.1	
Latin America	5,751	7.5	9,126	-1.6	1.0	2.2	3.0	3.1	3.1	3.1	1.8	2.9	
Mexico	1,268	1.6	10,176	2.0	2.4	2.6	2.2	2.3	2.3	2.9	2.1	2.3	
Cuba	74	0.1	6,606	-0.9	0.6	3.1	4.0	4.5	4.8	5.7	2.2	4.6	
Caribbean & Central America	431	0.6	5,675	2.1	1.8	2.1	2.3	2.6	2.9	3.6	1.9	2.9	
South America	3,979	5.2	9,506	-3.1	0.5	2.1	3.3	3.4	3.4	3.0	1.7	3.1	
Argentina	457	0.6	10,321	-2.2	2.0	3.3	3.4	3.2	3.0	2.8	1.6	2.8	
Brazil	2,251	3.0	10,855	-3.6	0.1	1.6	3.2	3.4	3.4	2.9	1.5	3.0	
Other	1,271	1.7	7,614	-2.6	0.5	2.7	3.5	3.6	3.5	3.4	2.3	3.3	
Europe	19,854	25.3	36,349	1.8	2.2	1.9	1.7	1.6	1.5	2.6	0.8	1.5	
European Union	18,633	23.8	36,097	1.9	2.2	1.9	1.7	1.6	1.5	2.6	0.8	1.5	
Other Europe	1,222	1.6	40,698	1.4	1.4	1.8	2.0	1.9	1.9	2.6	1.2	1.8	
Former Soviet Union	2,245	2.9	7,872	0.3	1.8	1.9	2.0	1.9	1.9	6.2	1.4	1.9	
Russia	1,651	2.1	11,604	-0.2	1.4	1.4	1.4	1.4	1.4	5.8	1.0	1.5	
Ukraine	126	0.2	2,868	2.3	1.8	2.4	2.7	3.0	3.2	5.8	-1.5	3.2	
Other	468	0.6	4,730	1.5	3.3	3.6	3.7	3.4	3.0	8.3	4.5	3.0	
Asia and Oceania	26,014	32.4	6,495	4.4	4.5	4.6	4.4	4.4	4.4	4.3	4.5	4.3	
East Asia	18,443	23.0	11,590	4.2	4.3	4.2	4.0	3.9	3.9	4.1	4.3	3.8	
China	10,123	12.4	7,339	6.7	6.5	6.3	6.0	5.9	5.8	10.0	8.2	5.5	
Hong Kong	277	0.4	38,572	1.9	2.8	2.3	2.6	2.4	2.3	3.9	2.6	2.2	
Japan	6,129	7.9	48,467	1.0	1.4	1.3	1.0	0.9	0.9	1.0	0.5	0.9	
South Korea	1,342	1.7	26,217	2.8	2.9	2.8	2.7	2.5	2.3	4.9	3.1	2.2	
Taiwan	527	0.7	22,407	1.5	2.1	2.1	2.2	2.0	2.0	5.0	2.6	2.0	
Southeast Asia	2,759	3.4	4,274	4.6	4.7	4.8	4.9	4.8	4.7	4.0	4.8	4.6	
Burma	18	0.0	1,121	7.0	6.9	6.8	6.6	6.5	6.4	9.3	6.3	6.3	
Cambodia	1,090	1.4	4,182	5.0	5.0	5.2	5.3	5.2	5.1	2.8	5.5	5.1	
Indonesia	359	0.5	11,453	4.2	4.5	4.7	4.9	4.8	4.7	4.6	4.3	4.6	
Malaysia	68	0.1	1,227	6.4	7.4	7.5	7.5	7.3	7.0	12.0	8.1	6.7	
Philippines	303	0.4	2,902	6.9	6.4	6.3	6.2	6.0	5.5	4.2	5.6	5.2	
Thailand	419	0.5	6,131	3.2	3.3	3.3	3.2	3.3	3.3	3.9	3.0	3.3	
Vietnam	174	0.2	1,812	6.1	6.2	6.4	6.4	6.2	6.1	6.6	5.9	6.0	
South Asia	3,178	3.9	1,836	6.8	7.0	7.4	7.5	7.5	7.7	6.7	6.7	7.2	
Bangladesh	179	0.2	1,131	7.1	7.2	7.0	6.8	6.6	6.5	5.4	6.3	6.4	
India	2,635	3.2	2,055	7.9	7.3	7.7	7.8	7.9	8.1	7.2	7.2	7.6	
Pakistan	236	0.3	1,153	4.7	5.2	5.5	5.5	5.4	5.3	4.7	3.6	5.3	
Oceania	1,634	2.1	44,138	2.9	2.4	2.5	2.8	2.7	2.7	3.6	2.6	2.5	
Australia	1,432	1.8	61,620	2.8	2.4	2.6	2.9	2.8	2.7	3.6	2.6	2.6	
New Zealand	177	0.2	39,272	4.0	2.5	2.2	2.1	2.3	2.3	3.5	1.9	2.2	
Middle East	3,576	4.5	11,182	3.8	2.2	3.2	3.9	3.7	3.6	4.4	3.4	3.4	
Iran	514	0.6	6,266	8.9	3.3	4.3	4.5	4.2	4.0	5.2	2.0	4.0	
Iraq	218	0.3	5,569	11.0	3.0	3.4	3.3	4.0	4.5	8.6	6.6	4.5	
Saudi Arabia	682	0.9	23,864	1.7	-1.0	1.3	4.1	3.8	3.5	3.0	3.6	3.1	
Turkey	1,102	1.4	13,635	2.9	4.0	3.5	3.5	3.4	3.3	4.2	4.7	3.2	
Other	1,060	1.4	11,885	2.6	1.7	3.7	3.9	3.8	3.5	4.7	2.4	3.5	
Africa	2,341	3.0	1,978	1.7	2.8	3.2	3.5	3.6	3.6	5.0	3.3	3.5	
North Africa	647	0.8	3,406	3.1	3.9	3.6	3.6	3.6	3.6	4.5	2.2	3.6	
Egypt	265	0.3	2,734	4.3	3.8	4.0	4.1	4.2	4.2	4.7	3.9	4.2	
Morocco	119	0.2	3,509	1.0	4.2	3.9	4.0	3.8	3.6	4.6	3.9	3.6	
Sub-Saharan Africa	1,694	2.2	1,705	1.2	2.4	3.1	3.5	3.6	3.6	5.3	3.8	3.5	
South Africa	422	0.6	7,688	0.3	0.5	1.4	1.7	2.0	2.2	3.7	1.6	2.0	
Nigeria	462	0.6	2,423	-1.6	1.1	2.3	3.2	3.5	3.8	7.9	4.4	3.7	
West African Community	172	0.2	1,011	5.5	5.6	5.9	5.4	5.0	4.4	3.6	5.4	4.4	
Other Sub-Saharan Africa	638	0.8	1,104	2.9	3.7	4.0	4.3	4.3	4.2	5.7	4.7	4.1	

Source: Historical data from various sources; compiled in the International Macroeconomic Data Set, U.S. Department of Agriculture, Economic Research Service. International macroeconomic assumptions were based on information available in August 2017.

Table 3. Population growth assumptions

Region/country	Population in 2017	2016	2017	2018	2019	2020	2021	Average		
								1998-07	2008-17	2018-27
	Millions	Percent change								
World ¹	7,332	1.1	1.1	1.0	1.0	1.0	1.0	1.2	1.1	0.9
North America	361	0.7	0.7	0.7	0.7	0.7	0.7	1.0	0.8	0.7
Canada	36	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6
United States	326	0.7	0.7	0.7	0.7	0.7	0.7	1.0	0.8	0.7
Latin America	630	1.0	1.0	0.9	0.9	0.9	0.9	1.3	1.1	0.8
Mexico	125	1.2	1.1	1.1	1.1	1.0	1.0	1.3	1.3	1.0
Cuba	11	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	0.2	-0.1	-0.2
Other Caribbean & Central Am.	76	1.3	1.1	1.1	1.1	1.1	1.0	1.6	1.2	1.0
South America	419	0.9	0.9	0.9	0.9	0.8	0.8	1.3	1.0	0.8
Argentina	44	0.9	0.9	0.9	0.9	0.9	0.8	1.1	1.0	0.8
Brazil	207	0.8	0.7	0.7	0.7	0.7	0.7	1.3	0.9	0.6
Other	167	1.1	1.1	1.1	1.0	1.0	1.0	1.4	1.2	0.9
Europe	546	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.1
European Union	516	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.1
Other Europe	30	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.2
Former Soviet Union	285	0.2	0.2	0.2	0.2	0.2	0.1	-0.2	0.2	0.1
Russia	142	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.4	0.0	-0.2
Ukraine	44	-0.5	-0.4	-0.2	0.0	-0.1	-0.3	-0.8	-0.5	-0.4
Other	99	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.8	0.6
Asia and Oceania	4,005	0.9	0.8	0.8	0.8	0.8	0.7	1.2	0.9	0.7
East Asia	1,591	0.4	0.4	0.3	0.3	0.3	0.2	0.5	0.4	0.2
China	1,379	0.4	0.4	0.4	0.4	0.3	0.3	0.6	0.5	0.2
Hong Kong	7	0.4	0.3	0.3	0.3	0.2	0.2	0.8	0.3	0.1
Japan	126	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	0.1	-0.1	-0.3
South Korea	51	0.6	0.5	0.5	0.4	0.4	0.3	0.6	0.5	0.3
Taiwan	24	0.2	0.2	0.2	0.1	0.1	0.1	0.6	0.3	0.0
Southeast Asia	646	1.0	1.0	1.0	1.0	0.9	0.9	1.5	1.1	0.9
Cambodia	16	1.6	1.5	1.5	1.5	1.4	1.4	1.6	1.7	1.3
Indonesia	261	0.9	0.9	0.8	0.8	0.8	0.8	1.4	1.0	0.7
Malaysia	31	1.4	1.4	1.4	1.3	1.3	1.3	2.3	1.6	1.2
Burma	55	1.0	0.9	0.9	0.9	0.9	0.8	1.2	0.9	0.8
Philippines	104	1.6	1.6	1.6	1.6	1.5	1.5	2.1	1.7	1.5
Thailand	68	0.3	0.3	0.3	0.3	0.3	0.2	0.7	0.4	0.2
Vietnam	96	1.0	0.9	0.9	0.9	0.8	0.8	1.3	1.1	0.8
South Asia	1,731	1.2	1.2	1.2	1.2	1.1	1.1	1.7	1.3	1.1
Bangladesh	158	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.1	0.9
India	1,282	1.2	1.2	1.2	1.1	1.1	1.1	1.6	1.3	1.0
Pakistan	205	1.5	1.5	1.4	1.4	1.4	1.4	2.2	1.6	1.3
Oceania	37	1.1	1.1	1.1	1.1	1.1	1.0	1.4	1.2	1.0
Australia	23	1.1	1.0	1.0	1.0	1.0	1.0	1.2	1.1	0.9
New Zealand	5	0.8	0.8	0.8	0.8	0.7	0.7	1.0	0.9	0.7
Middle East	320	1.7	1.7	1.7	1.6	1.5	1.4	1.9	1.7	1.4
Iran	82	1.3	1.3	1.2	1.2	1.1	1.0	1.2	1.3	1.0
Iraq	39	2.9	2.7	2.6	2.5	2.4	2.5	2.8	3.5	2.4
Saudi Arabia	29	1.5	1.5	1.4	1.4	1.4	1.4	2.1	1.5	1.4
Turkey	81	1.1	0.7	0.5	0.5	0.5	0.6	1.3	1.1	0.6
Other	89	2.0	2.5	3.0	2.7	2.5	1.9	3.0	1.9	1.9
Africa	1,184	2.4	2.4	2.4	2.3	2.3	2.3	2.5	2.5	2.2
North Africa	190	2.0	2.0	1.9	1.8	1.8	1.7	1.7	2.0	1.6
Egypt	97	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.5	2.1
Morocco	34	1.0	1.0	1.0	0.9	0.9	0.9	1.3	1.1	0.9
Sub-Saharan Africa	994	2.5	2.5	2.4	2.4	2.4	2.4	2.6	2.6	2.4
South Africa	55	1.2	1.0	1.0	1.0	1.0	1.0	1.3	1.1	0.9
Nigeria	191	2.5	2.5	2.4	2.4	2.4	2.4	2.6	2.5	2.4
West African Community	170	2.6	2.6	2.6	2.5	2.5	2.5	2.7	2.7	2.5
Other Sub-Saharan Africa	578	2.6	2.6	2.6	2.5	2.5	2.5	2.8	2.7	2.4

1/ Totals for the world include countries not otherwise listed in the table.

Source: U.S. Department of Commerce, Bureau of the Census (<https://www.census.gov/programs-surveys/international-programs.html>)

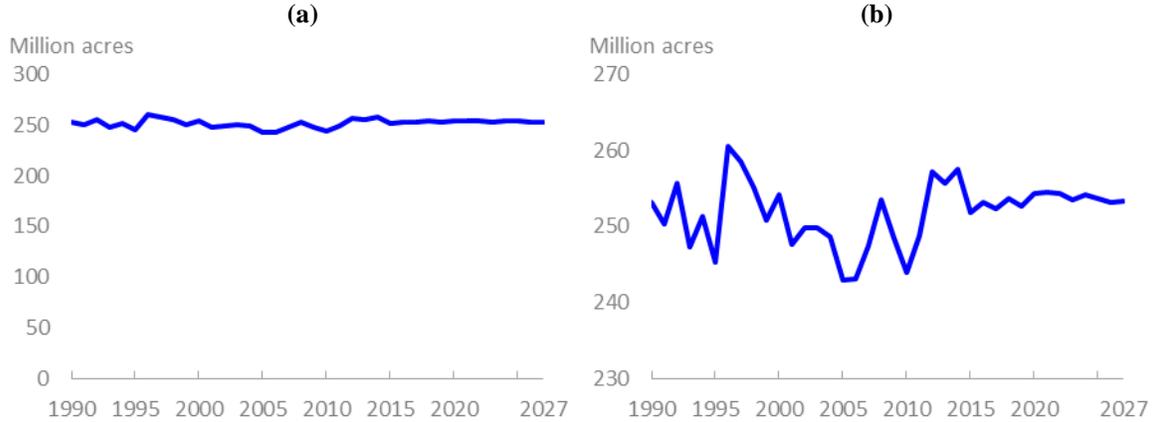
The population assumptions were completed in August 2017 based on the August 2017 Census update.

U.S. Crops

Food and feed grains prices are expected to have bottomed out by marketing year 2017/18. Marketing year 2018/19 marks the beginning of gradual price increases that are expected to continue through the decade. Despite price growth, prices are projected to remain lower than those seen over the past decade, leading to shifts in relative returns and accompanying changes in crop plantings. Shifts in acreage are expected – most notably from corn and, in the short run, wheat towards soybeans and sorghum, reflecting strong international demand for these commodities. These projections are the first in history where soybean acreage is expected to eclipse corn acreage.

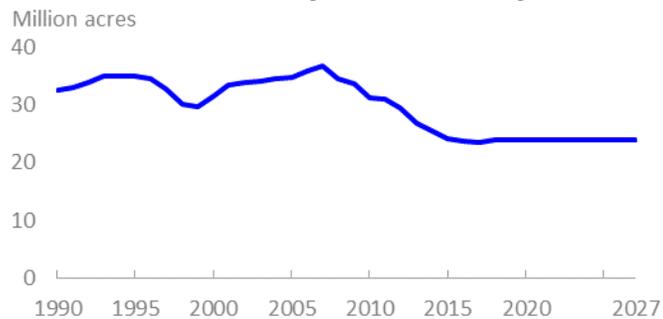
Averaging nearly 257 million acres during the recent peak in 2012-14, the planted acreage of the 8 major U.S. crops (corn, soybeans, wheat, upland cotton, sorghum, rice, barley, and oats) has averaged nearly 253 million acres since, and is expected to remain between 252 and 255 million acres over the next decade. Sustained increases in yields keep total production increasing, even for corn which is expected to lose the most acres over the next decade.

U.S. planted area for the eight major crops (corn, soybeans, wheat, upland cotton, sorghum, rice, barley, and oats) has remained relatively flat (a). Closer inspection shows considerable year to year variation (b).

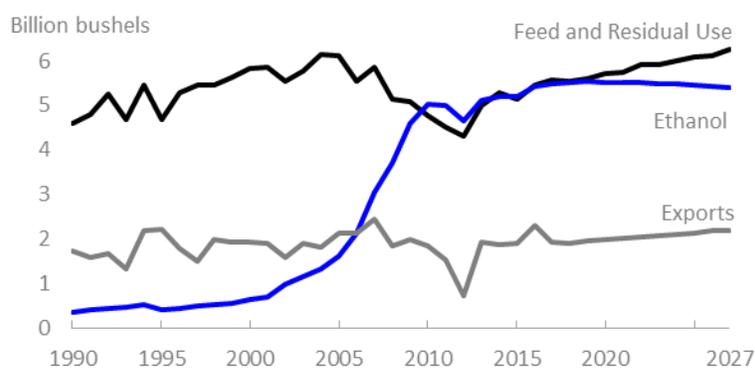


Farm programs of the 2014 Farm Act are assumed to extend through the projection period despite the likelihood of a new Farm Act being implemented. Acreage enrolled in the CRP is assumed to hold near the maximum levels currently legislated by Congress of 24 million acres.

Conservation Reserve Program (CRP) acreage

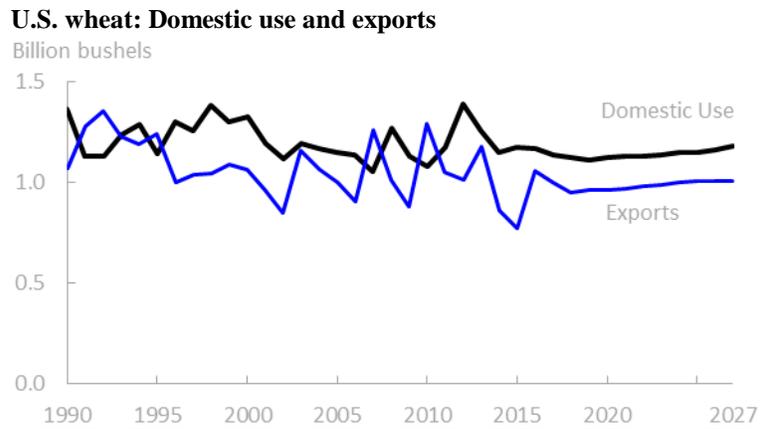


U.S. corn: Feed and residual use, ethanol, and exports



Demand for U.S. corn is projected to continue to grow over the next decade both domestically and internationally as expanding meat production increases feed usage. Despite planted area dropping as real prices and relative net returns fall, in part due to large stocks and rising global demand for soybeans and sorghum, increasing yields support the growing demand.

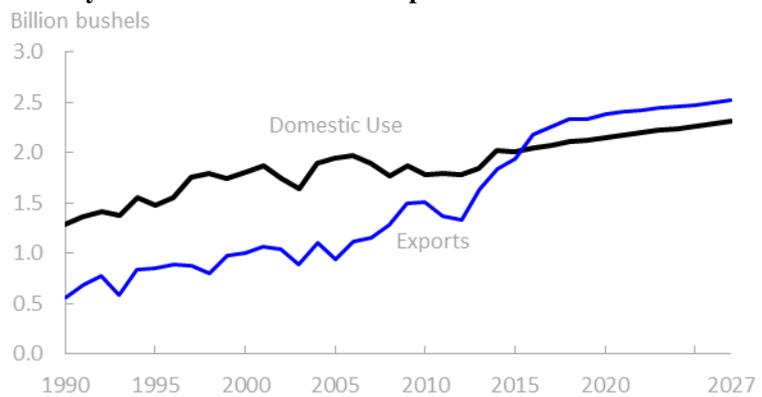
- While falling corn production will characterize the first few years, increases are expected in the later years. Lower corn prices suggest higher feed and residual use, helping to fuel increasing meat production. As ethanol production drops, production of distillers grains – a co-product of dry mill ethanol production used as feed – will also drop, further supporting the use of corn for feed.
- Corn remains the primary feedstock for ethanol production in the United States and corn-based ethanol production is projected to rise slowly over the next couple years and then decline to levels consistent with those in 2016 by the end of the decade. This reflects infrastructure, geographical and other constraints on growth for higher level ethanol blends (E15 and E85), and falling U.S. gasoline consumption due to rising fuel efficiency, rising real costs of fossil fuels, and changing consumer lifestyles and urban transport modes. Falling demand for fuel ethanol and a growing demand for corn for other uses means that by the end of the next decade, corn used for ethanol production declines from a high of over 38 percent of total use to below 35 percent.
- Food and industrial use of corn (other than ethanol production) remains steady over the first half of the projection period and declines slowly afterwards. Use of corn for high fructose corn syrup (HFCS) is expected to decline slowly, driven by dietary concerns.
- The United States remains the world's largest corn exporter over the projection period. Rising incomes, particularly in developing economies, translate to increasing demand for meat, bolstering demand for corn for feed. A projected slowly weakening U.S. dollar will improve export prospects. However, combined with greater competition from Brazil, Argentina, and Ukraine, and growing domestic feed use, the U.S. market share of global corn trade will slowly fall below 30 percent over the projection period.



U.S. farmers are projected to sow less wheat, with total plantings expected to drop to a low of 45 million acres in 2018/19 before a modest recovery lifts plantings to 48 million by the end of the decade. U.S. exports are also projected to decline in the initial years of the projection period due to increased competition in global wheat markets. A slow recovery back to current export levels is expected in later years. Overall, however, the U.S. share of global wheat trade continues to decline. U.S. domestic demand is expected to continue to grow slowly, with minor gains in food use and, after an initial drop in feed and residual use, an accompanied slow growth in feed and residual and seed use.

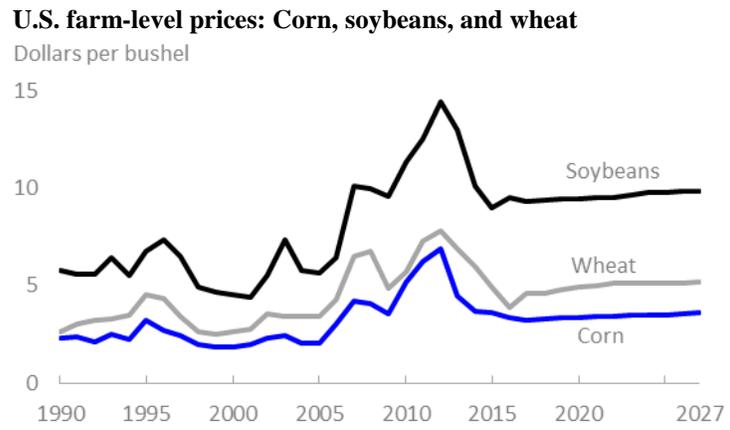
- Food use of wheat is projected to grow slowly and at a slightly slower rate than U.S. population increases, reflecting a mature market and long-term per capita wheat food use trends.
- While largely stable over the next 10 years, feed and residual use of wheat is lower in the first years of the projection period due to above-average near term corn stocks which, in part, provide support for higher wheat-to-corn price ratios and discourage wheat feeding. As corn stocks decline, the wheat-to-corn price ratio returns to more normal levels, and wheat feeding levels rise for the balance of the projection period. However, wheat feed and residual usage remains below the average of the previous decade.
- As a result of growing domestic supplies, U.S. wheat imports are projected to drop slowly over the next decade. In particular, U.S. production of spring and durum wheat is projected to reach levels sufficient to moderately reduce demand for imported wheat from Canada, which had increased sharply in 2017/18 due to smaller U.S. durum and spring wheat production.
- U.S. wheat exports decline in the short-run followed by a period of slow volume growth. Strong competition from Russia and Ukraine, the European Union, and Canada limit relative export growth in the longer-run and serve to reduce the U.S. share of world exports. Over the next decade, the European Union is expected to replace the United States as the second highest global exporter of wheat. Together, the former Soviet Union, the European Union, the United States, and Canada together capture nearly three-quarters of the global export market.

U.S. soybeans: Domestic use and exports



Increasing global demand and rising domestic use for soybeans is expected to cause prices to rise and generate higher producer returns, producing incentives to increase plantings. For the first time, soybean plantings are expected to rise above corn, hovering around 91 to 92 million acres.

- Increased demand for soybean meal and oil, and hence crush, are projected over the next decade. These gains reflect low expected feed prices, increasing livestock production, a modest rise in biodiesel and renewable diesel production, and steady demand by foreign importers as incomes continue to rise globally.
- Strong global demand for soybeans – particularly in China – boosts U.S. soybean trade over the projection period. While soybean exports are projected to rise, competition from South America – primarily Brazil, the world’s leading exporter – will lead to a reduced U.S. share of global soybean trade.
- U.S. exports of soybean oil and meal will also continue to face strong competition from South America. As the leading exporter, Argentina’s share of world soybean meal exports continues to grow to over 48 percent of the global market by the second half of the projection period, in part due to export policies that continue to favor soybean products over soybeans. Brazil, the second largest soybean meal exporter, is projected to increase its share of soybean meal exports to almost 25 percent. Despite modest increases in meal exports, the United States loses global share, dropping from just over 16 percent to 14 percent of the global market by the end of the decade.
- Soybean oil used to produce biodiesel in the United States is projected to increase to almost 7.3 billion pounds by 2021/22 and later years, supporting the annual production of over 1 billion gallons of biodiesel in the second half of the projection period. Some additional demand for biodiesel and renewable diesel is also assumed to meet a portion of the RFS’s advanced biofuel requirement. Other feedstocks used to produce biomass-based diesel include corn oil from distillers’ grains, other first-use and recycled (used) cooking oil, and animal fats.



High commodity prices in the latter half of the 2000's encouraged higher U.S. and international production and led to increased global supplies of corn, wheat, and soybeans, ultimately resulting in a significant drop in U.S. farm-level prices in 2013 and a subsequent downward trend in prices. Nominal prices are projected to bottom-out in 2017 before transitioning to gradually improving prices. Projected U.S. grain and soybean prices are supported by a return to trend yields, which reduces projected production, continued global growth in population and per capita income, along with a generally steady biofuel demand. As a result, nominal prices are expected to remain above pre-2007 levels over the next decade. Despite nominal gains, rising inflation over the projection period causes a modest drop in real prices for corn and soybeans while the real wheat price remains relatively stable through 2027.

- Modest growth in nominal corn prices is projected over the next decade as ending stocks remain high due to low demand growth coupled with rising yields and production. Real prices are expected to drop slightly over projection period.
- Nominal soybean prices are also expected to increase slowly over the projection period, primarily due to increased demand for soybeans in key export markets such as China and expanding domestic demand for soybean products. Strong competition from South America limits the upward momentum of nominal U.S. prices and real prices are expected to decline.
- Decreasing wheat supplies combine with moderately increasing food and export use to support a trend of increasing nominal wheat prices over the next decade. Nominal price growth is tempered by increasing competition in global wheat markets as the U.S. share of global wheat trade, particularly for winter wheat, shrinks over the projection period. Despite stronger nominal price recovery for wheat, as compared to corn and soybeans, rising inflation keeps projected real prices relatively flat through 2027.

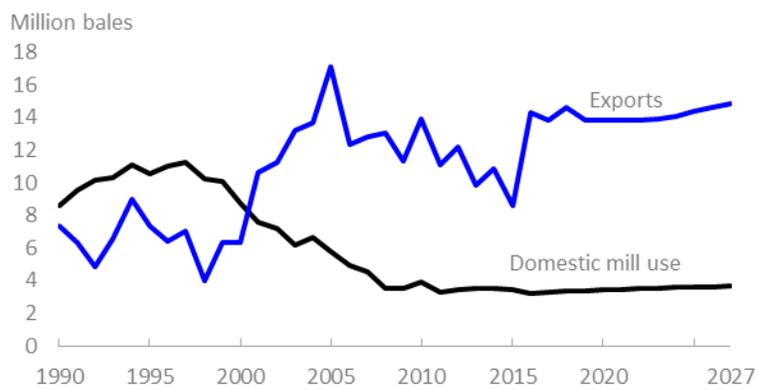
U.S. rice: Domestic and residual use and exports



In marketing year 2018/19, U.S. rice area is expected to experience a rapid recovery in planted acreage due to improved prices, after which area is projected to remain relatively flat for the remainder of the decade. Long grain is expected to account for nearly all of the expected area increase.

- Domestic and residual use of rice remains steady at roughly 60 percent of U.S. production over the next ten years, increasing at a slightly faster rate than population growth. U.S. rice imports are expected to grow over the next decade at an average of slightly less than 0.6 percent per year, and are made up primarily of Asian aromatic varieties, classified as long-grain rice and coming almost exclusively from Thailand, India, and Pakistan.
- U.S. exports are projected to grow fastest in the beginning of the decade, with an overall average growth of 1.2 percent per year. However, this average quickly drops to less than 1 percent after the 2018/19 crop year. Rough-rice exports to Latin America (almost all long-grain) are expected to account for most of the overall expansion of U.S. rice exports. Despite growth in exports, the U.S. global share drops from roughly 7.5 percent of the global market to just over 7 percent by the end of the projection period due to the faster-paced export growth anticipated primarily from Burma, Cambodia, Vietnam, and China. While South America is not one of the top five exporters in the beginning of the decade, expected growth will place it in the top five by the end. India is expected to maintain its status as the largest global rice exporter over the projection period, with Thailand remaining number two.
- U.S. rice prices are expected to decline in the first years of the baseline after which they are projected to begin growing at an average rate of roughly 1.1 percent annually over the remainder of the projection period. This modest growth reflects a slowly increasing domestic and residual use, increased global demand, and a relatively stable U.S. stocks-to-use ratio.

U.S. upland cotton: Domestic mill use and exports



Upland cotton plantings are projected to remain close to 11 million acres through the projection period. Market year average prices are expected to start around 63 cents per pound before increasing to 72 cents per pound by the end of the decade. Domestic mill use is expected to slowly grow over this timeframe while exports are projected to remain high, fluctuating between 13.8 and 14.9 million bales.

- U.S. mill use is projected to increase marginally over the next decade in response to rising demand for U.S. textile product exports, such as fabric and yarn. Despite the slight gains, mill use remains less than one quarter of total U.S. disappearance of upland cotton over the projection period. While mill use in the late 1990s made up closer to 60 percent of total U.S. cotton use, those levels have not been seen since, due, in part, to increased competition from both foreign manufacturing of cotton and synthetic fibers such as polyester.
- U.S. upland cotton exports are projected to fluctuate in the early years and then trend higher again in the second half of the projection period. The United States remains the largest exporter of cotton, and is expected to export between 13.8 and 14.9 million bales per year over the next decade. With strong growth expected in both Brazil and India, as well as from West African countries, the U.S. trade share is expected to drop from 40 percent in 2016/17 to 27 percent by the end of the decade. India, Brazil, and the West African countries exported roughly 11 million bales in 2016/17 and are expected to more than double their exports, with over 23 million bales projected in 2027/28. In the first year of the projection, Bangladesh and Vietnam are expected to import the largest amount of cotton. However, strong growth in China's imports places them at the top of the list by 2019/20. An expected annual growth rate exceeding 12 percent will have more than one-third of global cotton trade headed to China by 2027/28.

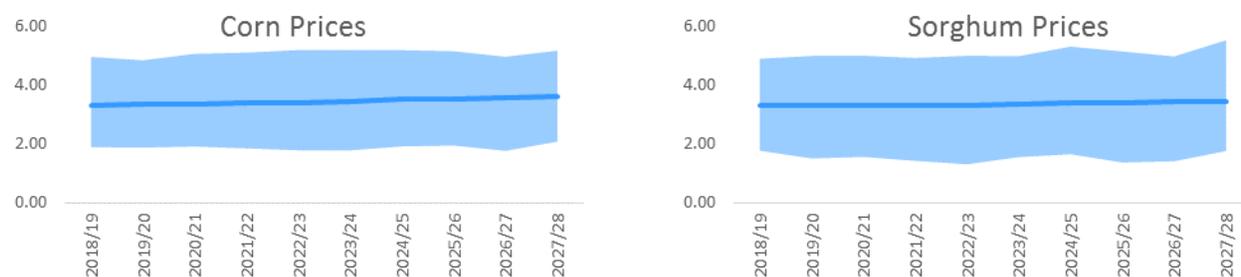
Stochastic Model

The USDA baseline projections provide an estimate for a conditional scenario based on specific assumptions to where USDA's projection models and experts believe commodity markets are headed in the future. While these projections are informative to policy makers for projecting budgets, farmers for planning and purchasing decisions, and the public in general, they only provide a limited amount of information as to the range of potential realized outcomes. While USDA has used a stochastic approach for prices and production estimates starting with the FY 2007 President's Budget to provide more information to stakeholders, developments in mathematical modeling at the USDA have been undertaken that build off prior research.

The new addendum to the U.S. baseline projections models the statistically estimated behavior of producers, consumers, traders, and storage holders to changes in prices and macroeconomic factors. Modeling the behavior of these economic agents to changes in prices allows for building in the uncertainty of random crop yields and macroeconomic variables on commodity markets. Accordingly, this type of model also allows for fitting uncertainty around events to the existing USDA baseline committee's projections of a particular scenario based on specific assumptions about macroeconomic, weather, and policy (both domestic and foreign) variables.

Although this model's output is not a statistical projection of future outcomes since it relies on the committee and their models to project outcomes, it does provide a range of scenario outcomes based on statistical simulations and our best attempt at modeling economic agents' behavior to the potential variability of future commodity markets. If one were to believe the projections made from the Baseline and the assumptions behind those projections, this model would present the potential outcomes for a variety of unforecastable scenarios, such as changes caused by shifts due to drought or trade.

In order to model the uncertainty around the projections, statistical simulations of forecasted crop yields and macroeconomic variables are used to mimic the variability of random outcomes in the market. The model simulates the variation in 8 crops and two macro variables, over ten years and 500 simulations. This effectively provides a large range in potential outcomes, conditional on the original projections and assumptions. The following presents a sample of the simulation results, providing potential ranges for the projected crop prices.



--Continued

Stochastic Model -- Continued

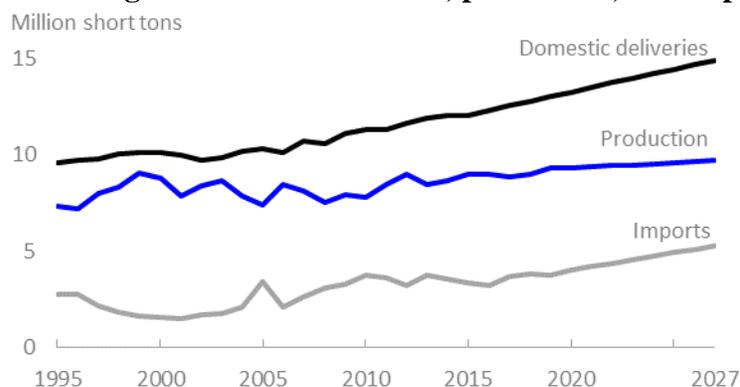


While the confidence band widens in the first few years of the decade for soybeans, this pattern doesn't occur across all crops. Recall that the confidence bands are constructed using historical patterns in data. If prices or supply and demand variables have fluctuated a lot in the past, the confidence band may remain quite wide over the entire decade (e.g., corn) while other markets may be in a relatively steady equilibrium (e.g., oats) and exhibit a relatively narrow confidence band around the price point estimates.

It is important to note that although a crop may appear to have a wide range of potential prices, as shown in these graphs, the confidence bands do not provide any information on the likelihood of any individual price being realized. Outcomes near the dark line are significantly more likely than the prices at the edges. Again, these bands simply show where 95 percent of the simulated prices fell, given the particular set of assumptions used, and do not provide any information regarding the probability of any particular price actually occurring.

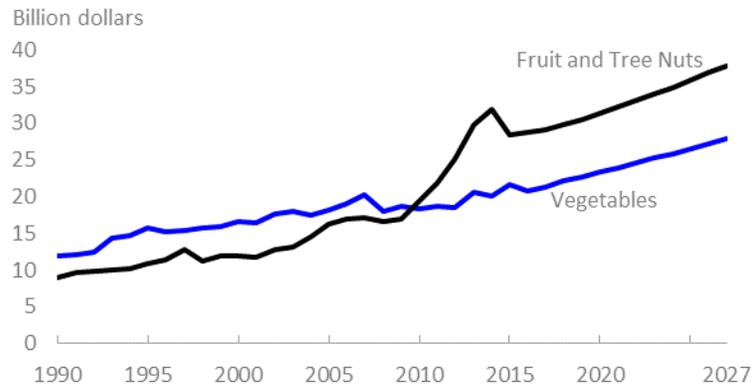
While these charts show the confidence bands around the price estimates we generate based on the conditional scenario used, the stochastic model can provide similar confidence bands for any of the supply and use variables in the projections. This becomes a useful tool for better understanding the commodity markets and where they may be headed conditional on the assumption set, enhancing the ability of our current models. While this shows the first steps towards adopting such an approach, it is expected that future reports will incorporate this information – particularly in the calculation of farm program outlays, which are used to generate the farm income statements.

U.S. sugar: domestic deliveries, production, and imports



- Sugar deliveries for domestic use increase steadily from 12.7 million short tons in 2018/19 to 14.9 million in 2027/28, driven by population growth and a continued substitution of refined sugar for corn sweeteners. Refined sugar is expected to account for a growing share of per capita caloric sweetener use, replacing corn sweeteners, even as overall per capita use is projected to decline. Deliveries for food and beverages constitute the bulk of total use and account for the growth throughout the projection period.
- U.S. sugar production is projected to increase at a lower rate than deliveries. Expected favorable returns induce a projected increase in sugar production of more than 0.7 million short tons over the coming decade. Increases in sugarbeet yields and sucrose recovery exceed the expected declines in harvested area, particularly in the later portion of the projection period when production costs are expected to increase (oil prices). Cane sugar production is also projected to steadily increase, coming predominantly from increased harvested area. Despite facing similar cost increases as the sugarbeet sector, multi-year planting cycles make sugarcane growers less responsive to changes in production costs.
- Total sugar imports are expected to increase by almost 39 percent over the coming decade, as projected demand exceeds supply. By 2026/27, imports account for 31.1 percent of total sugar supply in the United States, compared with 26.2 percent in 2018/19.
- Projected imports from Mexico follow the terms of the suspension agreements put in place in December 2014 and amended in June 2017 that restrict volumes and prices of sugar entering the United States from Mexico. Imports from Mexico are projected to rise along with increased U.S. needs for sugar. Projected imports from Mexico are less than the projected Export Limit, defined by the suspension agreements, due to constrained supplies available for export in Mexico. Imports from Mexico still increase, however, as projections for 2027/28 are 22 percent larger than projected volumes in 2018/19.
- Imports under quota programs increase from 1.9 million short tons in 2018/19 to 3.0 million in 2027/28, primarily to allow for adequate supplies in the U.S. sugar market to accommodate increased use.
- Despite expected increases in production, Mexican sugar supplies available for export to the United States are constrained due to projected growth in Mexican domestic demand.
- U.S. consumption of high fructose corn syrup (HFCS) is projected to steadily decline, both on a per capita and total volume basis, accounting for a small proportion of total caloric sweetener consumption in the United States. U.S. production of HFCS remains relatively constant throughout the period, however, due to increased exports, particularly to Mexico.

U.S. fruit, nut, and vegetable: Value of production



The total farm value of fruit, nuts, and vegetable production is projected to grow by roughly 2.7 percent annually over the next decade, reaching just over \$65.8 billion by calendar year 2027, up from almost \$52 billion in 2018. Fruits contribute nearly 40 percent of the total value, tree nuts roughly 18 percent, and vegetables approximately 42 percent.

- Over the next 10 years, both U.S. fruit and tree nuts production and vegetable production, measured by farm weight (in pounds of product), are projected to rise at an annual growth rate of 0.6 percent per year.
- The value of farm production of fruit and tree nuts is projected to grow at roughly 2.7 percent annually, with tree nuts expected to grow 3 percent per year, citrus at 2.6 percent, and non-citrus at 2.5 percent per year.
- Overall, fruit and nut production expands by roughly 0.6 percent per year, reaching 61.5 billion pounds in 2027. Early losses in the decade come from Hurricane Irma sweeping through, with a swift rebound in 2019 expected. While the value of production is expected to grow over the next decade due to higher prices, citrus production continues to decline slowly over the projection period, primarily due to loss of bearing acreage in Florida and the spread of citrus greening, a citrus disease spread by insects for which no cure currently exists. Citrus greening has the potential to threaten the entire citrus industry if not closely monitored. Declines in citrus production are projected to be offset by increases in non-citrus production. Tree nut output continues its strong growth over the projection period.
- Over the next 10 years, shares of vegetable production for fresh use and processing are expected to remain at current levels and each account for approximately 30 percent of total production respectively. Cultivation of pulses, which had expanded greatly in the last couple years, is expected to continue to increase, but at a much slower rate, as other countries, particularly India, look to rely less heavily on foreign markets by producing more domestically.

Table 4. Acreage for major field crops and Conservation Reserve Program (CRP) assumptions, long-term projections

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Million acres</i>												
Planted acreage, eight major crops												
Corn	94.0	90.4	91.0	90.0	90.0	89.5	89.5	88.5	88.5	88.0	87.5	87.5
Sorghum	6.7	5.7	6.7	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Barley	3.1	2.5	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9
Oats	2.8	2.6	2.9	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5
Wheat	50.1	46.0	45.0	46.0	47.0	47.0	47.0	47.0	48.0	48.0	48.0	48.0
Rice	3.2	2.5	2.9	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9
Upland cotton	9.9	12.4	11.2	10.5	10.7	10.8	10.9	11.0	11.1	11.2	11.3	11.4
Soybeans	83.4	90.2	91.0	91.0	91.5	92.0	92.0	92.0	91.5	91.5	91.5	91.5
Total	253.1	252.3	253.7	252.6	254.3	254.4	254.4	253.5	254.1	253.6	253.2	253.3
CRP acreage assumptions												
Total CRP	23.8	23.5	23.9	24.0	24.0	23.9	24.0	24.0	23.9	24.0	23.9	23.9
Total planted plus CRP	276.9	275.8	277.6	276.6	278.3	278.4	278.3	277.4	278.0	277.6	277.2	277.3
Harvested acreage, eight major crops												
Corn	86.7	83.1	83.7	82.7	82.7	82.2	82.2	81.2	81.2	80.7	80.2	80.2
Sorghum	6.2	5.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Barley	2.6	2.0	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5
Oats	1.0	0.8	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
Wheat	43.9	37.6	38.3	39.1	40.0	40.0	40.0	40.0	40.8	40.8	40.8	40.8
Rice	3.1	2.4	2.9	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9
Upland cotton	9.3	11.1	9.8	9.2	9.4	9.5	9.5	9.6	9.7	9.8	9.9	10.0
Soybeans	82.7	89.5	90.1	90.1	90.5	91.0	91.0	91.0	90.5	90.5	90.5	90.5
Total	235.5	231.5	234.2	233.2	234.7	234.8	234.7	233.9	234.3	233.8	233.4	233.5

Note: Totals may not add due to rounding.

Table 5. U.S. corn long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	94.0	90.4	91.0	90.0	90.0	89.5	89.5	88.5	88.5	88.0	87.5	87.5
Harvested acres	86.7	83.1	83.7	82.7	82.7	82.2	82.2	81.2	81.2	80.7	80.2	80.2
Yield:												
Bushels per harvested acre	174.6	175.4	173.5	175.5	177.5	179.5	181.5	183.5	185.5	187.5	189.5	191.5
Supply and use (million bushels):												
Beginning stocks	1,737	2,295	2,487	2,607	2,597	2,637	2,647	2,657	2,617	2,632	2,627	2,607
Production	15,148	14,578	14,520	14,515	14,680	14,755	14,920	14,900	15,065	15,130	15,200	15,360
Imports	57	50	50	50	50	50	50	50	50	50	50	50
Supply	16,942	16,922	17,057	17,172	17,327	17,442	17,617	17,607	17,732	17,812	17,877	18,017
Feed & residual	5,463	5,575	5,550	5,600	5,700	5,750	5,900	5,925	6,000	6,075	6,125	6,250
Food, seed, & industrial	6,891	6,935	7,000	7,025	7,015	7,020	7,010	6,990	7,000	6,985	6,970	6,955
Ethanol and by-products	5,438	5,475	5,525	5,550	5,525	5,525	5,500	5,475	5,475	5,450	5,425	5,400
Domestic use	12,354	12,510	12,550	12,625	12,715	12,770	12,910	12,915	13,000	13,060	13,095	13,205
Exports	2,293	1,925	1,900	1,950	1,975	2,025	2,050	2,075	2,100	2,125	2,175	2,200
Total use	14,647	14,435	14,450	14,575	14,690	14,795	14,960	14,990	15,100	15,185	15,270	15,405
Ending stocks	2,295	2,487	2,607	2,597	2,637	2,647	2,657	2,617	2,632	2,627	2,607	2,612
Stocks/use ratio, percent	15.7	17.2	18.0	17.8	18.0	17.9	17.8	17.5	17.4	17.3	17.1	17.0
Price (dollars per bushel):												
Farm price	3.36	3.20	3.30	3.35	3.35	3.40	3.40	3.45	3.50	3.50	3.55	3.60
Variable costs of production (dollars):												
Per acre	334	329	336	341	347	348	351	357	362	365	367	370
Returns over variable costs (dollars per acre):												
Net returns	253	232	236	247	248	262	266	276	288	291	306	320

Note: Totals may not add due to rounding. Marketing year beginning September 1 for corn.

Table 6. U.S. sorghum long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	6.7	5.7	6.7	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Harvested acres	6.2	5.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Yield:												
Bushels/harvested acre	77.9	70.4	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3
Supply and use (million bushels):												
Beginning stocks	37	34	19	33	37	36	35	34	38	37	36	35
Production	480	356	384	384	384	384	384	384	384	384	384	384
Imports	2	0	0	0	0	0	0	0	0	0	0	0
Supply	519	389	403	417	421	420	419	418	422	421	420	419
Feed & residual	129	60	65	65	65	65	65	60	60	60	60	60
Food, seed, & industrial	115	100	75	75	75	70	65	60	60	55	50	45
Domestic use	245	160	140	140	140	135	130	120	120	115	110	105
Exports	241	210	230	240	245	250	255	260	265	270	275	280
Total use	485	370	370	380	385	385	385	380	385	385	385	385
Ending stocks	34	19	33	37	36	35	34	38	37	36	35	34
Stocks/use ratio, percent	6.9	5.2	8.9	9.7	9.4	9.1	8.8	10.0	9.6	9.4	9.1	8.8
Price (dollars per bushel):												
Farm price	2.79	3.10	3.30	3.30	3.30	3.30	3.30	3.35	3.40	3.40	3.45	3.45
Variable costs of production (dollars):												
Per acre	135	134	137	139	142	143	144	147	149	151	152	153
Returns over variable costs (dollars per acre):												
Net returns	82	84	85	83	81	79	78	79	80	78	80	79

Note: Totals may not add due to rounding. Marketing year beginning September 1 for sorghum.

Table 7. U.S. barley long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	3.1	2.5	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9
Harvested acres	2.6	2.0	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5
Yield:												
Bushels/harvested acre	77.9	72.6	73.4	74.1	74.8	75.4	76.1	76.8	77.5	78.2	78.8	79.5
Supply and use (million bushels):												
Beginning stocks	102	106	61	60	61	63	67	65	60	62	60	60
Production	200	142	191	193	194	196	190	192	194	195	197	199
Imports	10	15	15	15	15	15	15	15	15	15	15	15
Supply	312	263	267	268	270	274	272	272	269	272	272	274
Feed & residual	39	35	40	40	40	40	40	45	40	45	45	45
Food, seed, & industrial	162	162	162	162	162	162	162	162	162	162	162	162
Domestic use	201	197	202	202	202	202	202	207	202	207	207	207
Exports	4	5	5	5	5	5	5	5	5	5	5	5
Total use	205	202	207	207	207	207	207	212	207	212	212	212
Ending stocks	106	61	60	61	63	67	65	60	62	60	60	62
Stocks/use ratio, percent	51.8	30.3	29.1	29.6	30.6	32.5	31.5	28.4	30.1	28.4	28.4	29.4
Price (dollars per bushel):												
Farm price	4.96	4.60	4.60	4.60	4.60	4.65	4.65	4.70	4.75	4.75	4.80	4.80
Variable costs of production (dollars):												
Per acre	170	169	173	176	179	180	183	186	189	191	193	195
Returns over variable costs (dollars per acre):												
Net returns	216	165	184	191	192	198	200	197	204	205	211	210

Note: Totals may not add due to rounding. Marketing year beginning June 1 for barley.

Table 8. U.S. oats long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	2.8	2.6	2.9	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5
Harvested acres	1.0	0.8	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
Yield:												
Bushels/harvested acre	66.0	61.7	66.3	66.6	66.9	67.3	67.6	67.9	68.3	68.6	69.0	69.3
Supply and use (million bushels):												
Beginning stocks	57	50	30	38	40	41	42	43	44	44	43	41
Production	65	49	73	67	67	67	68	68	68	62	62	62
Imports	90	100	95	95	95	95	95	95	95	95	95	95
Supply	212	200	198	200	202	203	205	206	207	201	200	198
Feed & residual	82	90	80	80	80	80	80	80	80	75	75	75
Food, seed, & industrial	76	78	78	78	79	79	80	80	81	81	82	82
Domestic use	158	168	158	158	159	159	160	160	161	156	157	157
Exports	3	2	2	2	2	2	2	2	2	2	2	2
Total use	162	170	160	160	161	161	162	162	163	158	159	159
Ending stocks	50	30	38	40	41	42	43	44	44	43	41	39
Stocks/use ratio, percent	31.2	17.5	23.6	24.8	25.3	25.9	26.4	27.0	26.8	27.0	25.6	24.4
Price (dollars per bushel):												
Farm price	2.06	2.50	2.15	2.20	2.20	2.20	2.20	2.25	2.30	2.30	2.30	2.35
Variable costs of production (dollars):												
Per acre	105	103	106	108	110	111	112	114	116	118	119	120
Returns over variable costs (dollars per acre):												
Net returns	31	51	37	39	37	37	37	39	41	40	40	43

Note: Totals may not add due to rounding. Marketing year beginning June 1 for oats.

Table 9. U.S. wheat long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	50.1	46.0	45.0	46.0	47.0	47.0	47.0	47.0	48.0	48.0	48.0	48.0
Harvested acres	43.9	37.6	38.3	39.1	40.0	40.0	40.0	40.0	40.8	40.8	40.8	40.8
Yield:												
Bushels/harvested acre	52.7	46.3	47.4	47.8	48.2	48.6	49.0	49.4	49.8	50.2	50.6	50.9
Supply and use (million bushels):												
Beginning stocks	976	1,181	935	813	739	714	690	667	648	650	658	667
Production	2,309	1,741	1,815	1,869	1,928	1,944	1,960	1,976	2,032	2,048	2,064	2,077
Imports	118	150	135	130	130	130	130	130	120	120	120	120
Supply	3,402	3,071	2,885	2,812	2,797	2,788	2,780	2,773	2,800	2,818	2,842	2,864
Food	949	950	950	950	950	955	960	960	965	965	970	975
Seed	61	66	62	63	63	63	63	65	65	65	65	65
Feed & residual	156	120	110	100	110	110	110	110	120	120	130	140
Domestic use	1,167	1,136	1,122	1,113	1,123	1,128	1,133	1,135	1,150	1,150	1,165	1,180
Exports	1,055	1,000	950	960	960	970	980	990	1,000	1,010	1,010	1,010
Total use	2,222	2,136	2,072	2,073	2,083	2,098	2,113	2,125	2,150	2,160	2,175	2,190
Ending stocks	1,181	935	813	739	714	690	667	648	650	658	667	674
Stocks/use ratio, percent	53.1	43.8	39.2	35.6	34.3	32.9	31.6	30.5	30.2	30.5	30.7	30.8
Price (dollars per bushel):												
Farm price	3.89	4.60	4.60	4.80	4.90	5.00	5.10	5.10	5.10	5.10	5.10	5.20
Variable costs of production (dollars):												
Per acre	116	115	118	119	122	123	124	126	128	130	131	132
Returns over variable costs (dollars per acre):												
Net returns	89	98	100	110	114	120	126	126	126	126	127	132

Note: Totals may not add due to rounding. Marketing year beginning June 1 for wheat.

Table 10. U.S. soybeans and products long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Soybeans												
Area (million acres):												
Planted	83.4	90.2	91.0	91.0	91.5	92.0	92.0	92.0	91.5	91.5	91.5	91.5
Harvested	82.7	89.5	90.1	90.1	90.5	91.0	91.0	91.0	90.5	90.5	90.5	90.5
Yield: bushels per harvested acre	52.0	49.5	48.4	48.9	49.5	50.0	50.5	51.0	51.6	52.1	52.6	53.1
Supply (million bushels)												
Beginning stocks, September 1	197	301	425	376	351	324	323	325	328	321	324	331
Production	4,296	4,425	4,360	4,410	4,475	4,550	4,595	4,645	4,665	4,715	4,760	4,810
Imports	22	25	25	25	25	25	25	25	25	25	25	25
Total supply	4,515	4,752	4,810	4,811	4,851	4,899	4,943	4,995	5,018	5,061	5,109	5,166
Use (million bushels)												
Crush	1,899	1,940	1,970	1,985	2,005	2,025	2,050	2,075	2,095	2,120	2,145	2,165
Seed and residual	141	136	140	140	141	142	142	142	142	142	143	143
Exports	2,174	2,250	2,325	2,335	2,380	2,410	2,425	2,450	2,460	2,475	2,490	2,515
Total use	4,214	4,326	4,435	4,460	4,526	4,577	4,617	4,667	4,697	4,737	4,778	4,823
Ending stocks, August 31												
Total ending stocks	301	425	376	351	324	323	325	328	321	324	331	342
Stocks/use ratio, percent	7.2	9.8	8.5	7.9	7.2	7.0	7.0	7.0	6.8	6.8	6.9	7.1
Price (dollars per bushel)												
Soybean price, farm	9.47	9.30	9.40	9.45	9.45	9.50	9.50	9.60	9.75	9.75	9.80	9.80
Variable costs of production (dollars):												
Per acre	173	173	176	178	181	182	184	187	189	191	192	194
Returns over variable costs (dollars per acre):												
Net returns	320	287	279	284	287	293	296	303	314	317	323	326
Soybean oil (million pounds)												
Beginning stocks, October 1	1,687	1,711	1,616	1,636	1,651	1,621	1,566	1,626	1,721	1,821	1,956	2,156
Production	22,099	22,505	22,870	23,065	23,320	23,570	23,885	24,195	24,450	24,760	25,075	25,330
Imports	319	300	300	300	300	300	300	300	300	300	300	300
Total supply	24,104	24,516	24,786	25,001	25,271	25,491	25,751	26,121	26,471	26,881	27,331	27,786
Domestic disappearance	19,837	20,800	21,050	21,250	21,450	21,650	21,825	22,000	22,175	22,375	22,575	22,775
Biodiesel ¹	6,200	7,000	7,100	7,150	7,200	7,250	7,250	7,250	7,250	7,250	7,250	7,250
Food, feed, and other industrial	13,637	13,800	13,950	14,100	14,250	14,400	14,575	14,750	14,925	15,125	15,325	15,525
Exports	2,556	2,100	2,100	2,100	2,200	2,275	2,300	2,400	2,475	2,550	2,600	2,625
Total use	22,393	22,900	23,150	23,350	23,650	23,925	24,125	24,400	24,650	24,925	25,175	25,400
Ending stocks, September 30	1,711	1,616	1,636	1,651	1,621	1,566	1,626	1,721	1,821	1,956	2,156	2,386
Soybean oil price (dollars per lb)	0.325	0.345	0.350	0.354	0.359	0.363	0.368	0.372	0.377	0.382	0.386	0.392
Soybean meal (thousand short tons)												
Beginning stocks, October 1	264	401	300	300	300	300	300	300	300	300	300	300
Production	44,733	46,099	46,800	47,100	47,600	48,150	48,700	49,250	49,800	50,350	50,900	51,450
Imports	349	300	300	300	300	300	300	300	300	300	300	300
Total supply	45,347	46,800	47,400	47,700	48,200	48,750	49,300	49,850	50,400	50,950	51,500	52,050
Domestic disappearance	33,345	34,300	34,700	35,100	35,600	36,100	36,600	37,100	37,600	38,100	38,600	39,100
Exports	11,601	12,200	12,400	12,300	12,300	12,350	12,400	12,450	12,500	12,550	12,600	12,650
Total use	44,946	46,500	47,100	47,400	47,900	48,450	49,000	49,550	50,100	50,650	51,200	51,750
Ending stocks, September 30	401	300	300	300	300	300	300	300	300	300	300	300
Soybean meal price (dollars per ton)	316.88	315.00	325.00	337.00	337.00	339.00	339.00	343.00	349.00	349.00	350.00	350.00
Crushing yields (pounds per bushel)												
Soybean oil	11.63	11.56	11.57	11.58	11.59	11.60	11.61	11.62	11.63	11.64	11.65	11.66
Soybean meal	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00
Crush margin (dollars per bushel)	1.75	2.09	2.28	2.57	2.63	2.68	2.74	2.79	2.84	2.89	2.92	3.00

Note: Totals may not add due to rounding. Marketing year beginning September 1 for soybeans; October 1 for soybean oil and soybean meal.

¹Reflects biodiesel made from methyl ester as reported by the U.S. Department of Energy, Energy Information Administration.

Table 11. U.S. rice long-term projections, total rice, rough basis

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (thousand acres):												
Planted	3,150	2,487	2,900	2,820	2,815	2,835	2,860	2,885	2,910	2,910	2,910	2,910
Harvested	3,097	2,391	2,878	2,799	2,794	2,814	2,839	2,864	2,889	2,889	2,889	2,889
Yield:												
Pounds per harvested acre	7,237	7,461	7,651	7,692	7,731	7,765	7,802	7,842	7,878	7,916	7,958	7,996
Supply and use (million hundredweight):												
Beginning stocks	46.5	46.0	29.9	39.8	40.5	40.9	41.0	41.3	41.7	42.3	42.1	42.3
Production	224.1	178.4	220.2	215.3	216.0	218.5	221.5	224.6	227.6	228.7	229.9	231.0
Imports	23.5	24.5	24.7	24.8	25.0	25.1	25.2	25.4	25.5	25.6	25.8	25.9
Total supply	294.1	248.9	274.8	280.0	281.4	284.5	287.8	291.2	294.8	296.6	297.8	299.2
Domestic use and residual	131.4	115.0	127.0	130.0	130.0	132.0	134.0	136.0	137.5	138.5	138.5	138.5
Exports	116.7	104.0	108.0	109.5	110.5	111.5	112.5	113.5	115.0	116.0	117.0	117.5
Total use	248.0	219.0	235.0	239.5	240.5	243.5	246.5	249.5	252.5	254.5	255.5	256.0
Ending stocks	46.0	29.9	39.8	40.5	40.9	41.0	41.3	41.7	42.3	42.1	42.3	43.2
Stocks/use ratio, percent	18.5	13.7	16.9	16.9	17.0	16.8	16.7	16.7	16.8	16.5	16.5	16.8
Price (dollars per hundredweight):												
Average farm price	10.40	13.00	12.30	12.00	12.20	12.30	12.50	12.60	12.70	12.90	13.00	13.10
Variable costs of production (dollars):												
Per acre	567	566	578	586	594	599	606	614	622	629	634	640
Returns over variable costs (dollars per acre):												
Net returns	186	404	363	337	349	356	370	374	379	392	401	408

Note: Totals may not add due to rounding. Marketing year beginning August 1 for rice.

Table 12. U.S. rice long-term projections, long-grain rice, rough basis

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (thousand acres):												
Planted	2,442	1,817	2,175	2,100	2,100	2,125	2,150	2,175	2,200	2,200	2,200	2,200
Harvested	2,403	1,749	2,160	2,085	2,085	2,110	2,135	2,160	2,185	2,185	2,185	2,185
Yield:												
Pounds per harvested acre	6,927	7,212	7,449	7,486	7,524	7,561	7,599	7,637	7,675	7,714	7,752	7,791
Supply and use (million hundredweight):												
Beginning stocks	22.7	31.0	16.5	23.9	24.1	24.7	25.0	25.1	25.1	25.9	25.6	25.3
Production	166.5	126.1	160.9	156.1	156.9	159.5	162.2	165.0	167.7	168.5	169.4	170.2
Imports	20.3	21.3	21.5	21.6	21.7	21.8	21.9	22.0	22.1	22.2	22.3	22.4
Total supply	209.4	178.5	198.9	201.6	202.7	206.0	209.1	212.1	214.9	216.6	217.3	217.9
Domestic use & residual	99.7	88.0	98.0	100.0	100.0	102.0	104.0	106.0	107.0	108.0	108.0	108.0
Exports	78.7	74.0	77.0	77.5	78.0	79.0	80.0	81.0	82.0	83.0	84.0	84.0
Total use	178.4	162.0	175.0	177.5	178.0	181.0	184.0	187.0	189.0	191.0	192.0	192.0
Ending stocks	31.0	16.5	23.9	24.1	24.7	25.0	25.1	25.1	25.9	25.6	25.3	25.9
Stocks/use ratio, percent	17.4	10.2	13.6	13.6	13.9	13.8	13.6	13.4	13.7	13.4	13.2	13.5
Price (dollars per hundredweight):												
Average farm price	9.64	12.30	11.70	11.50	11.60	11.70	11.80	11.90	12.00	12.10	12.20	12.30

Note: Totals may not add due to rounding. Marketing year beginning August 1 for rice.

Table 13. U.S. rice long-term projections, medium- and short-grain rice, rough basis

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (thousand acres):												
Planted	708	670	725	720	715	710	710	710	710	710	710	710
Harvested	694	642	718	714	709	704	704	704	704	704	704	704
Yield:												
Pounds per harvested acre	8,311	8,137	8,253	8,295	8,336	8,378	8,420	8,462	8,504	8,547	8,589	8,632
Supply and use (million hundredweight):												
Beginning stocks	20.9	11.5	9.9	12.4	12.9	12.7	12.5	12.7	13.1	12.9	13.1	13.5
Production	57.7	52.2	59.3	59.2	59.1	59.0	59.3	59.6	59.9	60.2	60.5	60.8
Imports	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.5	3.5
Total supply	81.1	66.9	72.4	74.9	75.2	75.0	75.2	75.6	76.4	76.6	77.0	77.8
Domestic use & residual	31.7	27.0	29.0	30.0	30.0	30.0	30.0	30.0	30.5	30.5	30.5	30.5
Exports	37.9	30.0	31.0	32.0	32.5	32.5	32.5	32.5	33.0	33.0	33.0	33.5
Total use	69.6	57.0	60.0	62.0	62.5	62.5	62.5	62.5	63.5	63.5	63.5	64.0
Ending stocks	11.5	9.9	12.4	12.9	12.7	12.5	12.7	13.1	12.9	13.1	13.5	13.8
Stocks/use ratio, percent	16.5	17.4	20.7	20.8	20.4	20.1	20.3	21.0	20.4	20.6	21.3	21.6
Price (dollars per hundredweight):												
Average farm price	12.90	15.10	14.10	13.60	14.20	14.40	14.60	14.80	15.10	15.30	15.50	15.80
California	13.70	16.00	15.00	15.20	15.40	15.60	15.80	16.10	16.40	16.70	17.00	17.30
Other States	10.10	12.50	12.00	11.70	11.80	11.90	12.00	12.10	12.20	12.30	12.40	12.50

Note: Totals may not add due to rounding. Marketing year beginning August 1 for rice; California marketing year beginning October 1.

Table 14. U.S. upland cotton long-term projections

Item	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Area (million acres):												
Planted acres	9.9	12.4	11.2	10.5	10.7	10.8	10.9	11.0	11.1	11.2	11.3	11.4
Harvested acres	9.3	11.1	9.8	9.2	9.4	9.5	9.5	9.6	9.7	9.8	9.9	10.0
Yield:												
Pounds per harvested acre	855	888	854	859	864	869	874	879	884	889	894	899
Supply and use (thousand bales):												
Beginning stocks	3,664	2,686	5,989	5,371	4,519	4,033	3,813	3,859	3,970	4,146	4,336	4,440
Production	16,601	20,650	17,400	16,400	16,800	17,100	17,400	17,600	17,900	18,200	18,400	18,700
Imports	5	10	5	5	5	5	5	5	5	5	5	5
Supply	20,270	23,346	23,394	21,776	21,324	21,138	21,218	21,464	21,875	22,351	22,741	23,145
Domestic use	3,221	3,320	3,353	3,387	3,421	3,455	3,489	3,524	3,559	3,595	3,631	3,667
Exports	14,303	13,850	14,600	13,800	13,800	13,800	13,800	13,900	14,100	14,350	14,600	14,850
Total use	17,524	17,170	17,953	17,187	17,221	17,255	17,289	17,424	17,659	17,945	18,231	18,517
Ending stocks	2,686	5,989	5,371	4,519	4,033	3,813	3,859	3,970	4,146	4,336	4,440	4,558
Stocks/use ratio, percent	15.3	34.9	29.9	26.3	23.4	22.1	22.3	22.8	23.5	24.2	24.4	24.6
Price (dollars per pound):												
Farm price	0.680	0.630	0.630	0.640	0.650	0.660	0.670	0.680	0.690	0.700	0.710	0.720
Variable costs of production (dollars):												
Per acre	512	516	528	535	542	548	554	562	570	577	583	589
Returns over variable costs (dollars per acre):												
Net returns ¹	180	135	142	150	156	164	170	177	184	192	199	206

Note: Totals may not add due to rounding. Marketing year beginning August 1 for upland cotton.

¹Includes revenue from cottonseed, beginning with *USDA Agricultural Projections to 2026* (February 2017). Previously, net returns were calculated using an assumed cottonseed to lint ratio. The net return values use projections of cottonseed prices and yields, so are not directly comparable to values from prior years.

Table 15. U.S. sugar long-term projections

Item	Units	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Sugarbeets													
Planted area	1,000 acres	1,163	1,138	1,195	1,224	1,192	1,175	1,160	1,145	1,131	1,118	1,105	1,094
Harvested area	1,000 acres	1,126	1,113	1,162	1,196	1,166	1,149	1,133	1,118	1,106	1,093	1,079	1,069
Yield	Tons/acre	32.7	32.4	29.9	30.4	30.9	31.4	31.9	32.4	32.9	33.4	33.9	34.4
Production	Mil. s. tons	36.9	36.0	34.7	36.3	36.0	36.0	36.1	36.2	36.4	36.5	36.6	36.8
Sugarcane													
Harvested area	1,000 acres	853	845	862	872	882	889	896	900	903	908	912	916
Yield	Tons/acre	35.6	36.1	35.5	35.8	35.9	35.8	35.8	35.8	35.8	35.8	35.8	35.8
Production	Mil. s. tons	30.4	30.5	30.5	31.2	31.7	31.8	32.1	32.2	32.3	32.5	32.6	32.8
Supply:													
Beginning stocks	1,000 s. tons	2,054	1,834	1,775	1,732	1,765	1,798	1,830	1,863	1,895	1,927	1,958	1,989
Production	1,000 s. tons	8,967	8,836	8,975	9,312	9,343	9,378	9,442	9,483	9,546	9,604	9,649	9,713
Beet sugar	1,000 s. tons	5,101	4,950	5,019	5,252	5,204	5,206	5,217	5,228	5,248	5,265	5,275	5,302
Cane sugar	1,000 s. tons	3,866	3,886	3,956	4,060	4,140	4,172	4,225	4,255	4,298	4,339	4,374	4,411
Total imports	1,000 s. tons	3,247	3,710	3,810	3,794	4,006	4,213	4,389	4,585	4,758	4,933	5,120	5,283
TRQ imports	1,000 s. tons	1,611	1,756	1,899	1,804	1,967	2,134	2,260	2,459	2,592	2,739	2,889	3,002
Imports from Mexico	1,000 s. tons	1,204	1,694	1,651	1,730	1,779	1,819	1,869	1,866	1,906	1,934	1,970	2,022
Other imports	1,000 s. tons	431	260	260	260	260	260	260	260	260	260	260	260
Total supply	1,000 s. tons	14,268	14,380	14,560	14,838	15,114	15,389	15,661	15,931	16,199	16,464	16,727	16,986
Use:													
Exports	1,000 s. tons	95	50	50	50	50	50	50	50	50	50	50	50
Domestic deliveries	1,000 s. tons	12,286	12,555	12,778	13,023	13,267	13,508	13,748	13,986	14,222	14,456	14,687	14,916
Total use	1,000 s. tons	12,381	12,605	12,828	13,073	13,317	13,558	13,798	14,036	14,272	14,506	14,737	14,966
Ending stocks	1,000 s. tons	1,887	1,775	1,732	1,765	1,798	1,830	1,863	1,895	1,927	1,958	1,989	2,020
Raw sugar price:													
New York (No. 16) ¹	Cents/lb.	26.26	27.76	28.72	29.75	31.08	30.17	29.62	30.40	30.46	31.16	31.96	32.30
Raw sugar loan rate	Cents/lb.	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75
Beet sugar loan rate	Cents/lb.	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09	24.09
Grower prices:													
Sugarbeets	Dollars/ton	35.50	47.10	47.02	46.74	48.07	48.83	48.87	48.69	48.95	49.27	50.17	51.11
Sugarcane	Dollars/ton	32.50	35.22	37.02	38.59	39.02	40.16	40.14	40.66	41.69	42.21	42.96	43.77

Note: Totals may not add due to rounding. Data shown are for an October-September year.

¹Price for July-September quarter.

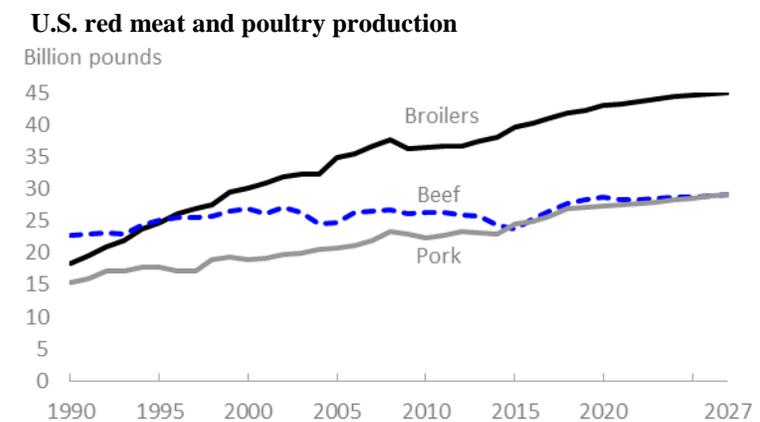
Table 16. Fruit, nuts, and vegetables long-term projections

Item	Unit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Production, farm weight													
Fruit and nuts	Mil. lbs.	61,060	58,110	56,584	58,803	59,313	59,606	59,906	60,213	60,528	60,849	61,178	61,515
Citrus	Mil. lbs.	17,496	15,530	13,214	15,000	15,072	14,921	14,772	14,624	14,478	14,333	14,190	14,048
Noncitrus	Mil. lbs.	37,301	36,500	37,230	37,528	37,828	38,131	38,436	38,743	39,053	39,366	39,681	39,998
Tree nuts	Mil. lbs.	6,264	6,080	6,141	6,276	6,414	6,555	6,699	6,847	6,997	7,151	7,309	7,469
Vegetables ¹	Mil. lbs.	132,746	133,233	135,288	136,074	136,871	137,681	138,501	139,209	139,925	140,649	141,380	142,119
Fresh market	Mil. lbs.	37,531	39,633	39,673	39,712	39,752	39,792	39,832	39,871	39,911	39,951	39,991	40,031
Processing	Mil. lbs.	39,971	40,682	41,007	41,335	41,666	41,999	42,335	42,674	43,015	43,360	43,706	44,056
Potatoes	Mil. lbs.	44,141	43,100	43,955	44,087	44,219	44,352	44,485	44,618	44,752	44,886	45,021	45,156
Pulses	Mil. lbs.	7,005	5,870	6,600	6,779	6,962	7,150	7,343	7,417	7,491	7,566	7,641	7,718
Other	Mil. lbs.	4,098	3,948	4,053	4,161	4,273	4,388	4,507	4,629	4,756	4,886	5,020	5,158
Total fruit, nuts, vegetables	Mil. lbs.	193,807	191,343	191,873	194,878	196,185	197,287	198,408	199,423	200,454	201,499	202,559	203,634
Farm value													
Fruit and nuts	\$ Mil.	28,808	29,077	29,749	30,554	31,382	32,232	33,105	34,002	34,924	35,871	36,843	37,843
Citrus	\$ Mil.	3,436	3,439	3,425	3,526	3,631	3,738	3,849	3,963	4,080	4,201	4,325	4,453
Noncitrus	\$ Mil.	16,609	16,699	17,117	17,545	17,983	18,433	18,894	19,366	19,850	20,346	20,855	21,376
Tree nuts	\$ Mil.	8,764	8,939	9,207	9,483	9,768	10,061	10,363	10,673	10,994	11,323	11,663	12,013
Vegetables	\$ Mil.	20,813	21,326	22,127	22,725	23,340	23,971	24,619	25,252	25,902	26,569	27,254	27,957
Fresh market	\$ Mil.	11,084	11,900	12,235	12,580	12,933	13,296	13,668	14,050	14,442	14,844	15,258	15,683
Processing	\$ Mil.	2,280	2,330	2,396	2,463	2,533	2,604	2,678	2,753	2,831	2,911	2,993	3,077
Potatoes	\$ Mil.	4,009	3,814	3,921	4,031	4,145	4,261	4,381	4,504	4,631	4,761	4,894	5,032
Pulses	\$ Mil.	1,543	1,389	1,650	1,694	1,740	1,787	1,836	1,884	1,933	1,981	2,029	2,077
Other	\$ Mil.	1,897	1,893	1,924	1,956	1,989	2,022	2,056	2,091	2,126	2,162	2,199	2,236
Total fruit, nuts, vegetables	\$ Mil.	49,621	50,403	51,875	53,279	54,721	56,203	57,724	59,254	60,826	62,440	64,097	65,799

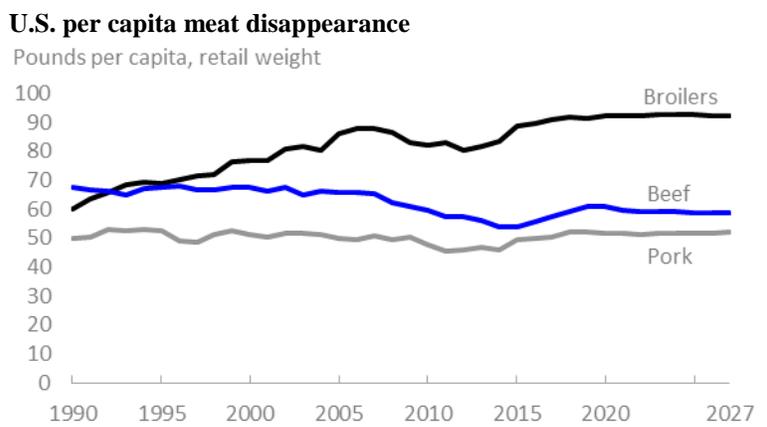
Note: Totals may not add due to rounding. ¹Includes melons, sweet potatoes, and mushrooms. Utilized production is used for potatoes. Pulses include edible dry beans and peas, lentils, and other peas.

U.S. Livestock

Favorable returns at the start of the projection period and robust demand provides incentives for continued growth of the U.S. livestock sector over the next ten years. In the beef cattle industry, the feed price ratios are expected to decline over the projection period reflecting lower cattle prices and suggesting lower returns to production. In the hog industry, the feed price ratio is expected to decline and then recover some of its value before flattening out while the broiler industry is expected to experience an overall relatively stable feed price ratio. Meanwhile, both domestic and global demand for meats and dairy products are expected to remain strong. Despite the lower expected returns, red meat and poultry production all increase over the projection period.



- Low corn prices in the first two years of the projection period raise the beef cattle feed price ratio, helping boost production. As cattle prices decline, the ratio also declines, slowing production. Despite slowing cattle numbers, increased slaughter weights help contribute to production gains. Overall, production levels are expected to rise at roughly 1 percent per year, increasing from 26.5 billion pounds in 2017 to over 29 billion by 2027.
- The low corn prices in the first two years also raise the hog feed price ratio, creating greater incentives to increase farrowings and continue the upward trend in pork production, with pork production expected to grow the fastest of the three. Lower pork prices decrease the feed price ratio early in the projection period, but hog prices rebound in the second half of the decade. As with beef, increased slaughter weights contribute to the increase in pork production. While pork production trails beef production for most of the decade, by 2027, both meats are being produced at the same level of roughly 29.1 billion pounds.
- Broiler prices in the next decade are expected to be relatively stable following a substantial increase in 2017. The feed price ratios that result from stable broiler prices and moderate feed costs remain favorable for the continued expansion of broiler production. Larger numbers of birds and higher average broiler slaughter weights are also expected to contribute to broiler production growth. Turkey producers face similar price patterns as broiler producers, with an associated modest growth in turkey production over the decade.

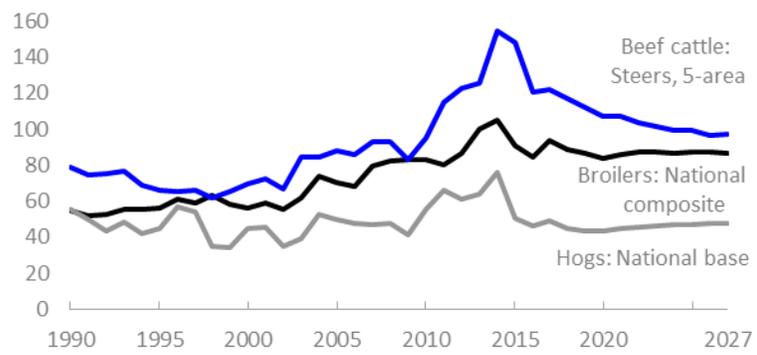


Per capita use of red meat (beef and pork) and poultry (broilers and turkey) is projected to rise from roughly 218 pounds per person in 2017 to 222 pounds by 2027. This represents a return to pre-Great Recession availability levels, marking a rebound from the low of 199 pounds per person observed in 2014, a level not seen since 1991.

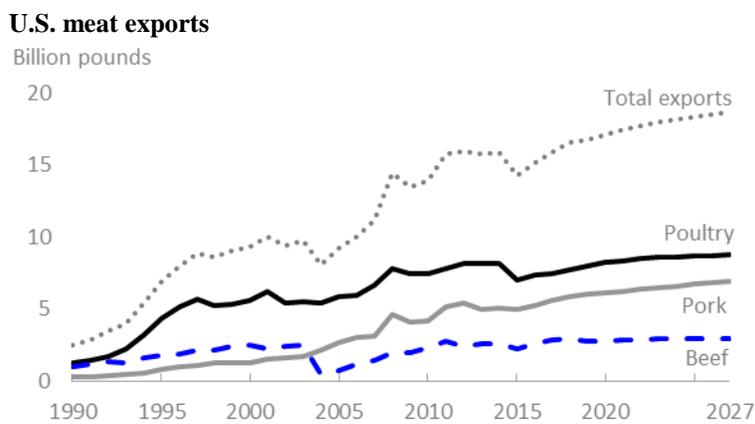
- Per capita beef disappearance is expected to increase in the first years of the projection period, followed by a mild downward trend in the later years, flattening out by the end of the decade at levels higher than those seen in the beginning of the projection period. Imports exceed exports through the projection period as processing beef demand remains relatively strong in the United States. Overall, per capita disappearance increases to 59 pounds per capita, up from 57 pounds in 2017.
- Pork production is expected to continue to grow and per capita pork disappearance to rise modestly through 2019, after which per capita is projected to flatten out at nearly 52 pounds per year. Throughout the projection period, pork exports continue to dominate imports, and pork production gains are expected to be sufficient to accommodate both the widening trade surplus as well as increased domestic demand, which is due largely to population growth.
- Poultry production is projected to rise over the projection period. Broiler per capita disappearance is expected to follow suit for the majority of the upcoming decade, with a mild decline in the last couple years of the decade, ending at just over 92 pounds per person. Per capita turkey disappearance is expected to decline slowly over the decade, dropping to 15.7 pounds per person from 16.6 in 2016.

U.S. Livestock prices, nominal

Dollars per hundredweight



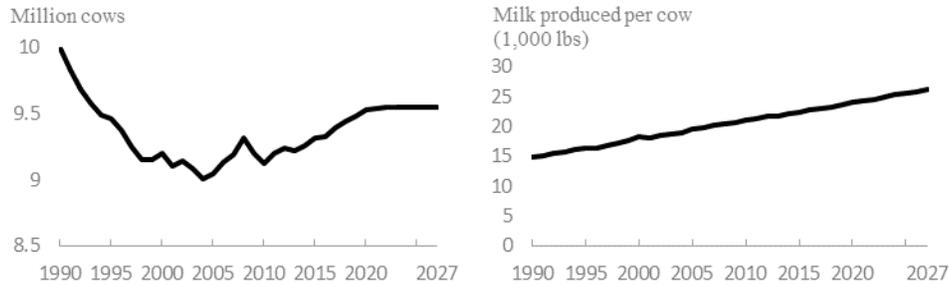
- Nominal beef cattle prices drop over much of the projection period before increasing at the end of the period.
- After an initial decline, nominal broiler and hog prices generally increase over the next decade as population growth and export demand are both expected to continue to grow.



The U.S. dollar is expected to weaken in 2018 relative to major trading partners, after which the dollar steadies, remaining relatively strong thereafter. Despite the strong dollar, U.S. red meat and poultry exports are projected to rise over the next 10 years as steady global economic growth, particularly in emerging and developing economies supports foreign demand from the U.S. market.

- After a drop in the early part of the decade, U.S. beef exports are expected to grow slowly. The United States, primarily a grain finished exporter, remains the fourth largest exporter behind Brazil, India, and Australia, which largely ship grass-finished cattle. Despite the modest growth in exports, the U.S. share of global exports among the top 11 major exporting regions of the world slowly declines. The United States is projected to remain the largest importer of beef in the world through the first half of the decade, but strong demand growth in China bumps the United States to the second largest by the second half.
- U.S. pork exports are projected to grow faster than beef exports and on par with poultry exports for the first part of the decade, continuing to grow as poultry starts to slow in the second half. Production efficiency gains in the hog sector continue to enhance the sector's international competitiveness. The United States is expected to maintain its position as the second largest exporter of pork, close behind the European Union while exporting more than twice the third largest exporter, Canada. Over the next decade, the EU is expected to decrease its market share, declining from 39 to 35 percent of the global export market. The United States is expected to grow from roughly 30 to 33 percent of the global market while Canada's share drops slightly.
- U.S. poultry (including broilers, turkey, and mature chickens) exports are expected to grow over the next ten years. Export growth is faster in the first part of the projection period in part due to the continued recovery from the decline associated with avian influenza that took place in 2015. The United States is expected to retain its position as second largest exporter of poultry after Brazil while the EU remains a distant third, exporting roughly one-third of U.S. levels. While almost 80 percent of all exports come from 3 countries, imports are much less concentrated.

U.S. dairy herd and milk production per cow



Milk production is expected to rise at a compound annual growth rate of 1.5 percent per year over the next ten years. Continued growth in domestic and global demand for dairy products combined with relatively low feed prices in the near term provide incentives for producers to expand milk cow numbers in the beginning of the decade. Efficiency gains continue to grow as the amount of milk produced per cow is expected to remain on the long-term upward trend.

- After a long downward trend, milk cows reached a low point of 9.01 million head in 2004. Since then, cow numbers have fluctuated but trended slightly upward, nearly reaching 9.33 million head in 2016. Milk cow numbers are expected to reach 9.55 million head by 2022 due to rising milk prices and relatively low feed prices. Gains in milk per cow and rising feed prices contribute to a flattening out of herd growth over the remainder of the decade.
- Trends in farm consolidation are expected to continue, leading to economies of scale. Coupled with technological and genetic developments, the long-term output per cow is expected to continue its growth over the next decade.
- Domestic demand grows at a strong pace, with commercial use of dairy products rising faster than the growth in U.S. population over the next decade. Demand for cheese is expected to rise due to continued greater consumption of prepared foods and increased away-from-home eating. Butter demand is also expected to grow, in part due to changing consumer perceptions about health implications of consuming milk fat. A decline in per capita consumption of fluid milk products is also expected to continue.
- Global demand for U.S. dairy products is expected to continue to grow over the next ten years, with largest increases in exports of products with high skim-solids content, such as nonfat dry milk and whey products. By 2027, dairy exports are expected to be 4.3 percent of milk production on a milk-fat milk-equivalent basis and 21.3 percent on a skim-solids milk-equivalent basis.
- Nominal farm-level milk prices are expected to increase over the projection period largely due to robust increases in both domestic and global demand. After fluctuating in the near term, the prices of dairy products are expected to rise steadily over the second half of the projection period.

Table 17. Per capita meat disappearance, retail weight

Item	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	<i>Pounds</i>											
Beef	55.6	57.3	59.2	60.9	60.9	59.8	59.3	59.1	59.2	59.0	59.0	59.0
Veal	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pork	50.1	50.4	52.1	52.2	51.9	51.7	51.5	51.6	51.7	51.8	51.9	52.0
Lamb and mutton	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total red meat	107.0	109.0	112.6	114.4	114.1	112.7	112.0	111.9	112.1	112.0	112.1	112.2
Broilers	89.8	91.0	91.8	91.6	92.4	92.4	92.4	92.6	92.7	92.6	92.3	92.2
Other chicken	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4
Turkeys	16.6	16.5	16.5	16.3	16.1	16.0	16.0	15.9	15.9	15.8	15.8	15.7
Total poultry	107.6	108.8	109.6	109.2	109.9	109.7	109.8	109.9	109.9	109.8	109.5	109.3
Red meat & poultry	214.6	217.8	222.2	223.6	224.0	222.5	221.8	221.8	222.1	221.9	221.6	221.5

Note: Totals may not add due to rounding.

Table 18. Beef long-term projections

Item	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Beginning stocks	Mil. lbs.	683	757	700	715	560	560	560	560	560	560	560	560
Commercial production	Mil. lbs.	25,221	26,400	27,620	28,312	28,644	28,363	28,329	28,436	28,642	28,730	28,914	29,097
Change from previous year	Percent	6.4	4.7	4.6	2.5	1.2	-1.0	-0.1	0.4	0.7	0.3	0.6	0.6
Farm production	Mil. lbs.	67	67	67	67	67	67	67	67	67	67	67	67
Total production	Mil. lbs.	25,288	26,467	27,687	28,379	28,711	28,430	28,396	28,503	28,709	28,797	28,981	29,164
Imports	Mil. lbs.	3,015	2,966	3,030	2,920	2,954	2,970	2,996	3,035	3,073	3,090	3,094	3,090
Total supply	Mil. lbs.	28,986	30,190	31,417	32,014	32,225	31,960	31,952	32,098	32,342	32,447	32,635	32,814
Exports	Mil. lbs.	2,556	2,855	2,970	2,752	2,734	2,812	2,889	2,918	2,932	2,959	2,970	2,976
Ending stocks	Mil. lbs.	757	700	715	560	560	560	560	560	560	560	560	560
Total disappearance	Mil. lbs.	25,673	26,635	27,732	28,702	28,931	28,588	28,503	28,620	28,850	28,928	29,105	29,278
Per capita, retail weight	Pounds	55.6	57.3	59.2	60.9	60.9	59.8	59.3	59.1	59.2	59.0	59.0	59.0
Change from previous year	Percent	2.9	3.0	3.4	2.8	0.1	-1.8	-1.0	-0.2	0.2	-0.4	0.0	0.0
Prices:													
Beef cattle, farm	\$/cwt	120.08	121.01	116.50	111.24	106.47	106.71	102.96	101.00	98.84	98.92	96.19	96.51
Calves, farm	\$/cwt	165.92	169.16	167.29	154.75	146.52	144.67	137.06	132.16	128.93	128.07	123.68	121.92
Steers, 5-area	\$/cwt	120.86	121.80	117.25	111.96	107.16	107.40	103.63	101.65	99.47	99.55	96.80	97.13
Feeder steers, Oklahoma City	\$/cwt	142.82	145.61	144.00	133.21	126.12	124.52	117.98	113.76	110.98	110.24	106.46	104.94
Feed price ratio:													
Beef cattle-corn	Ratio	33.3	36.0	36.4	33.7	31.8	31.9	30.3	29.7	28.6	28.3	27.5	27.2
Cattle inventory	1,000 head	91,918	93,585	94,500	94,500	93,912	93,416	93,136	92,773	92,265	92,017	92,061	92,365
Beef cow inventory	1,000 head	30,166	31,210	31,875	32,225	31,932	31,721	31,629	31,411	31,173	31,070	31,117	31,341
Total cow inventory	1,000 head	39,476	40,559	41,300	41,700	41,448	41,261	41,184	40,986	40,763	40,680	40,742	40,986

Note: Totals may not add due to rounding. Cwt = hundredweight.

Table 19. Pork long-term projections

Item	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Beginning stocks	Mil. lbs.	590	507	630	660	660	665	670	675	685	695	705	715
Commercial production	Mil. lbs.	24,941	25,740	26,925	27,170	27,307	27,467	27,669	27,926	28,242	28,548	28,832	29,128
Change from previous year	Percent	1.8	3.2	4.6	0.9	0.5	0.6	0.7	0.9	1.1	1.1	1.0	1.0
Farm production	Mil. lbs.	16	16	16	16	16	16	16	16	16	16	16	16
Total production	Mil. lbs.	24,957	25,756	26,941	27,186	27,323	27,483	27,685	27,942	28,258	28,564	28,848	29,144
Imports	Mil. lbs.	1,091	1,113	1,000	1,032	1,038	1,044	1,051	1,061	1,073	1,085	1,096	1,107
Total supply	Mil. lbs.	26,638	27,376	28,571	28,878	29,021	29,192	29,406	29,678	30,016	30,344	30,649	30,966
Exports	Mil. lbs.	5,239	5,588	5,900	6,017	6,135	6,252	6,369	6,487	6,604	6,721	6,839	6,956
Ending stocks	Mil. lbs.	507	630	660	660	665	670	675	685	695	705	715	725
Total disappearance	Mil. lbs.	20,892	21,158	22,011	22,201	22,221	22,270	22,362	22,506	22,717	22,918	23,095	23,285
Per capita, retail weight	Pounds	50.1	50.4	52.1	52.2	51.9	51.7	51.5	51.6	51.7	51.8	51.9	52.0
Change from previous year	Percent	0.8	0.6	3.3	0.2	-0.6	-0.4	-0.2	0.0	0.3	0.2	0.2	0.2
Prices:													
Hogs, farm	\$/cwt	49.64	52.31	48.07	45.23	45.83	47.02	48.06	48.68	48.93	49.27	49.64	49.97
National base, live equivalent	\$/cwt	46.16	49.01	45.00	43.08	43.65	44.78	45.77	46.36	46.60	46.92	47.28	47.59
Feed price ratio:													
Hog-corn	Ratio	13.8	15.6	15.0	13.7	13.7	14.0	14.1	14.3	14.2	14.1	14.2	14.1
Hog inventory,													
December 1, previous year	1,000 head	68,919	71,525	72,125	72,490	72,695	72,933	73,236	73,619	74,090	74,547	74,971	75,412

Note: Totals may not add due to rounding. Cwt = hundredweight.

Table 20. Young chicken long-term projections

Item	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Beginning stocks	Mil. lbs.	832	778	780	780	780	780	780	780	780	780	780	780
Federally inspected slaughter	Mil. lbs.	40,695	41,540	42,275	42,717	43,514	43,837	44,229	44,582	44,903	45,168	45,291	45,513
Change from previous year	Percent	1.6	2.1	1.8	1.0	1.9	0.7	0.9	0.8	0.7	0.6	0.3	0.5
Production	Mil. lbs.	40,260	41,096	41,823	42,260	43,049	43,368	43,756	44,105	44,422	44,685	44,806	45,026
Total supply	Mil. lbs.	41,223	41,997	42,733	43,171	43,961	44,281	44,670	45,020	45,338	45,602	45,724	45,945
Change from previous year	Percent	2.0	1.9	1.8	1.0	1.8	0.7	0.9	0.8	0.7	0.6	0.3	0.5
Exports	Mil. lbs.	6,644	6,713	6,910	7,184	7,426	7,535	7,657	7,718	7,774	7,820	7,841	7,880
Ending stocks	Mil. lbs.	778	780	780	780	780	780	780	780	780	780	780	780
Disappearance	Mil. lbs.	33,801	34,504	35,043	35,207	35,755	35,966	36,233	36,522	36,784	37,002	37,103	37,285
Per capita, retail weight	Pounds	89.8	91.0	91.8	91.6	92.4	92.4	92.4	92.6	92.7	92.6	92.3	92.2
Change from previous year	Percent	0.9	1.4	0.9	-0.2	0.9	-0.1	0.1	0.2	0.1	-0.1	-0.3	-0.1
Prices:													
Broilers, farm	Cents/lb.	47.9	54.3	51.2	51.9	50.5	51.7	52.3	52.3	52.2	52.3	52.3	52.1
Broilers, National composite	Cents/lb.	84.3	93.8	88.5	86.5	84.1	86.1	87.1	87.2	86.9	87.1	87.1	86.8
Feed price ratio:													
Broiler-feed ¹	Ratio	4.8	5.4	5.2	5.2	5.0	5.1	5.1	5.1	5.1	5.0	5.0	4.9

Note: Totals may not add due to rounding. ¹Broiler feed price based on 58 percent corn price and 42 percent soybean price, as used by USDA, National Agricultural Statistics Service.

Table 21. Turkey long-term projections

Item	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Beginning stocks	Mil. lbs.	201	279	300	300	300	300	300	300	300	300	300	300
Production	Mil. lbs.	5,981	5,997	6,025	6,024	6,021	6,033	6,063	6,083	6,109	6,129	6,148	6,171
Total supply	Mil. lbs.	6,232	6,304	6,365	6,360	6,357	6,369	6,399	6,419	6,445	6,465	6,484	6,507
Change from previous year	Percent	6.3	1.2	1.0	-0.1	-0.1	0.2	0.5	0.3	0.4	0.3	0.3	0.4
Exports	Mil. lbs.	569	618	650	693	707	712	728	730	733	735	738	741
Ending stocks	Mil. lbs.	279	300	300	300	300	300	300	300	300	300	300	300
Disappearance	Mil. lbs.	5,384	5,386	5,415	5,367	5,349	5,357	5,372	5,389	5,412	5,429	5,446	5,467
Per capita	Pounds	16.6	5386.0	5415.0	5367.0	5349.0	5357.0	5372.0	5389.0	5412.0	5429.0	5446.0	5467.0
Change from previous year	Percent	4.1	-0.6	-0.1	-1.5	-1.0	-0.5	-0.4	-0.3	-0.2	-0.3	-0.3	-0.3
Prices:													
Turkey, farm	Cents/lb.	82.5	65.6	67.4	66.7	67.9	68.6	69.2	69.8	70.0	70.4	70.8	71.3
Hen turkeys, National	Cents/lb.	117.1	96.6	99.3	98.2	100.1	101.1	102.0	102.8	103.2	103.7	104.3	105.1
Feed price ratio:													
Turkey-feed ¹	Ratio	9.0	7.4	7.6	7.4	7.4	7.5	7.5	7.5	7.4	7.4	7.4	7.4

Note: Totals may not add due to rounding. ¹Turkey feed price based on 51 percent corn price, 28 percent soybean price, and 21 percent wheat price, as used by USDA, National Agricultural Statistics Service.

Table 22. Egg long-term projections

Item	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Beginning stocks	Mil. doz.	31	27	27	27	27	27	27	27	27	27	27	27
Production	Mil. doz.	8,565	8,771	8,905	9,083	9,219	9,339	9,442	9,546	9,651	9,757	9,855	9,953
Change from previous year	Percent	6.4	2.4	1.5	2.0	1.5	1.3	1.1	1.1	1.1	1.1	1.0	1.0
Imports	Mil. doz.	122	37	40	40	40	40	40	40	40	40	40	40
Total supply	Mil. doz.	8,718	8,836	8,972	9,150	9,286	9,406	9,509	9,613	9,718	9,824	9,922	10,020
Change from previous year	Percent	6.3	1.3	1.5	2.0	1.5	1.3	1.1	1.1	1.1	1.1	1.0	1.0
Hatching use	Mil. doz.	1,010	1,029	1,030	1,039	1,051	1,060	1,066	1,073	1,078	1,083	1,086	1,089
Exports	Mil. doz.	279	313	320	327	332	335	338	341	344	347	350	353
Ending stocks	Mil. doz.	27	27	27	27	27	27	27	27	27	27	27	27
Disappearance	Mil. doz.	7,402	7,467	7,595	7,757	7,876	7,984	8,078	8,172	8,269	8,367	8,459	8,551
Per capita	Number	275.0	275.0	278.0	282.0	284.0	286.0	288.0	289.0	291.0	293.0	294.0	295.0
Change from previous year	Percent	7.2	0.2	1.0	1.4	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.5
Prices:													
Eggs, farm	Cents/doz.	76.5	84.9	85.4	81.0	81.9	83.7	84.6	85.5	85.5	85.5	86.4	87.3
New York, Grade A large	Cents/doz.	85.7	94.7	95.5	90.0	91.0	93.0	94.0	95.0	95.0	95.0	96.0	97.0
Feed price ratio:													
Egg-feed ¹	Ratio	8.9	10.1	10.5	9.7	9.7	9.9	9.9	10.0	9.9	9.8	9.9	9.9

Note: Totals may not add due to rounding. ¹Egg feed price based on 75 percent corn price and 25 percent soybean price, as used by USDA, National Agricultural Statistics Service.

Table 23. Dairy long-term projections

Item	Units	2016 ¹	2017	2018	2019	2020 ¹	2021	2022	2023	2024 ¹	2025	2026	2027
Milk production and marketings:													
Number of cows	Thousand	9,328	9,395	9,440	9,485	9,525	9,540	9,550	9,550	9,550	9,545	9,545	9,545
Milk per cow	Pounds	22,775	22,975	23,280	23,600	24,005	24,245	24,565	24,890	25,285	25,545	25,870	26,205
Milk production	Bil. lbs.	212.4	215.8	219.7	223.8	228.6	231.3	234.6	237.7	241.5	243.8	246.9	250.1
Farm use	Bil. lbs.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Marketings	Bil. lbs.	211.4	214.8	218.7	222.8	227.6	230.3	233.6	236.7	240.5	242.8	245.9	249.1
Supply and use, milkfat basis:													
Beginning commercial stocks	Bil. lbs.	12.3	12.7	13.6	12.4	12.7	13.6	14.0	14.4	14.7	15.0	15.3	15.6
Marketings	Bil. lbs.	211.4	214.8	218.7	222.8	227.6	230.3	233.6	236.7	240.5	242.8	245.9	249.1
Imports	Bil. lbs.	7.0	6.1	6.1	6.1	6.0	5.9	5.8	5.7	5.7	5.7	5.7	5.7
Commercial supply	Bil. lbs.	230.8	233.6	238.4	241.4	246.4	249.7	253.4	256.8	260.9	263.6	266.9	270.4
Domestic commercial use	Bil. lbs.	209.7	210.9	216.7	219.1	223.0	225.5	228.5	231.6	235.3	237.6	240.7	243.8
Commercial exports	Bil. lbs.	8.4	9.1	9.4	9.5	9.8	10.2	10.5	10.6	10.6	10.6	10.6	10.7
Ending commercial stocks	Bil. lbs.	12.7	13.6	12.4	12.7	13.6	14.0	14.4	14.7	15.0	15.3	15.6	15.9
Supply and use, skim solids basis:													
Beginning commercial stocks	Bil. lbs.	9.2	9.5	12.6	10.7	10.7	11.0	11.2	11.3	11.3	11.4	11.5	11.5
Marketings	Bil. lbs.	211.4	214.8	218.7	222.8	227.6	230.3	233.6	236.7	240.5	242.8	245.9	249.1
Imports	Bil. lbs.	6.5	6.1	6.1	6.2	6.1	6.1	6.0	6.0	6.0	6.0	6.0	6.0
Commercial supply	Bil. lbs.	227.1	230.4	237.4	239.7	244.5	247.4	250.8	254.0	257.8	260.3	263.4	266.7
Domestic commercial use	Bil. lbs.	178.5	177.9	185.1	186.4	189.1	190.5	192.4	194.3	196.7	198.0	199.8	201.8
Commercial exports	Bil. lbs.	39.0	39.9	41.7	42.7	44.3	45.7	47.1	48.4	49.7	50.8	52.1	53.3
Ending commercial stocks	Bil. lbs.	9.5	12.6	10.7	10.7	11.0	11.2	11.3	11.3	11.4	11.5	11.5	11.6
Prices:													
All milk	\$/cwt	16.30	17.70	17.35	17.65	16.90	16.80	16.85	17.05	17.35	17.70	18.15	18.60
Cheese	\$/lb.	1.61	1.64	1.67	1.70	1.64	1.61	1.61	1.62	1.63	1.65	1.67	1.70
Butter	\$/lb.	2.08	2.34	2.35	2.27	2.12	2.11	2.12	2.16	2.21	2.27	2.32	2.38
Nonfat dry milk	\$/lb.	0.83	0.87	0.80	0.87	0.88	0.89	0.92	0.94	0.97	1.01	1.04	1.08
Dry whey	\$/lb.	0.29	0.45	0.34	0.36	0.35	0.35	0.36	0.36	0.37	0.37	0.38	0.39

Note: Totals may not add due to rounding. Cwt = hundredweight

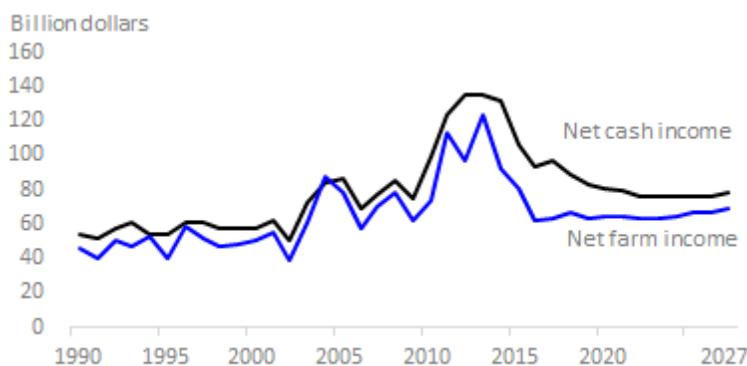
¹Leap year

U.S. Farm Income

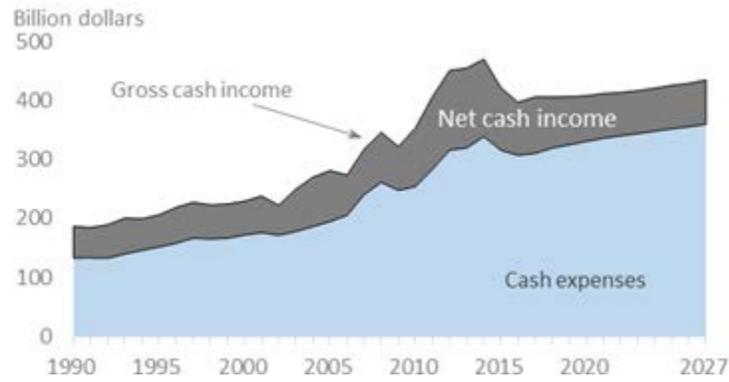
After three consecutive years of decline, net farm income and net cash income are forecast to increase for 2017. The stronger forecast growth in net cash income is largely due to additional cash receipts from the sale of crop inventories.

- Farm cash receipts are projected to fall slightly in 2018, primarily due to a decrease in animal/animal product receipts. Cash receipts then grow over the rest of the projection period as steady domestic and international economic growth support longer term demand for U.S. agricultural products.
- Total direct Government payments are projected to decline by \$0.3 billion in 2018. This further falls to a low of \$9.0 billion in 2019 as commodity prices begin to rise. Government payments are projected to increase again in 2020 and remain fairly steady over the remainder of the projection period. Agriculture Risk Coverage payments decline from \$3.7 billion in 2017 to \$75 million over the 10 year period, but this decline is partially offset by an increase in Price Loss Coverage payments from \$3.1 billion in 2017 to almost \$5.1 billion in 2027.
- Total farm production expenses are projected up \$4.2 billion to \$360 billion in 2018. The increase is due to higher expenditures on interest, hired labor, and fuels/oils. Partially offsetting these increases are expected drops in feed and fertilizer/lime expenses. Overall, nominal farm production expenses are projected to increase after 2017 and through the remainder of the projection period as crude oil prices, interest rates, and inflation all are expected to rise.

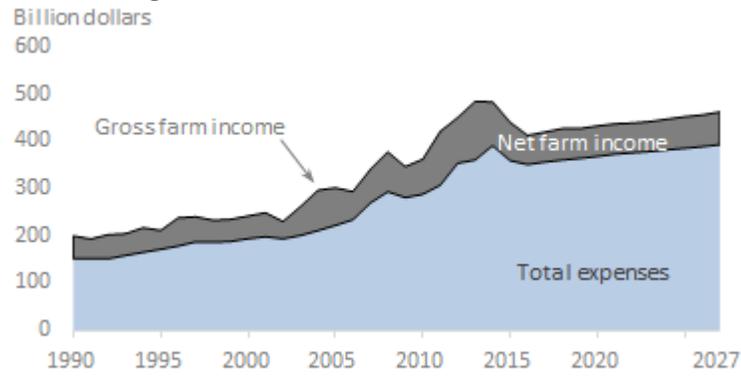
U.S. farm income indicators



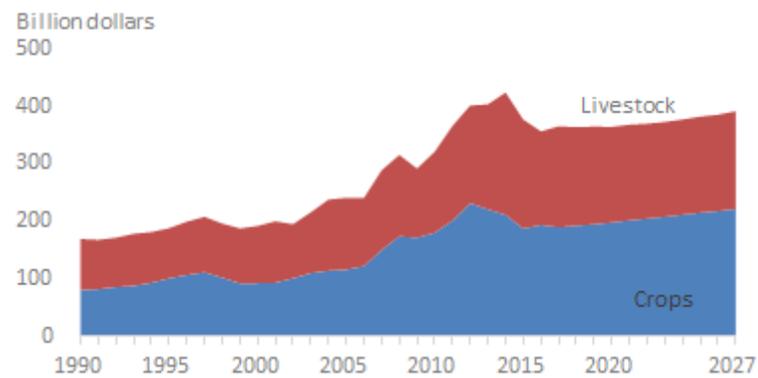
U.S. gross cash income

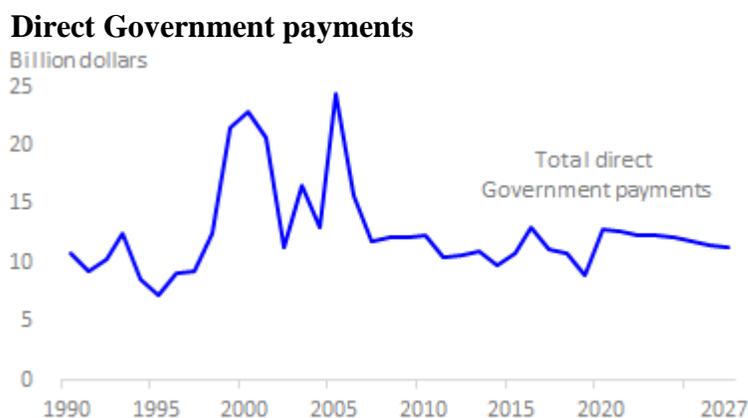


U.S. total gross income



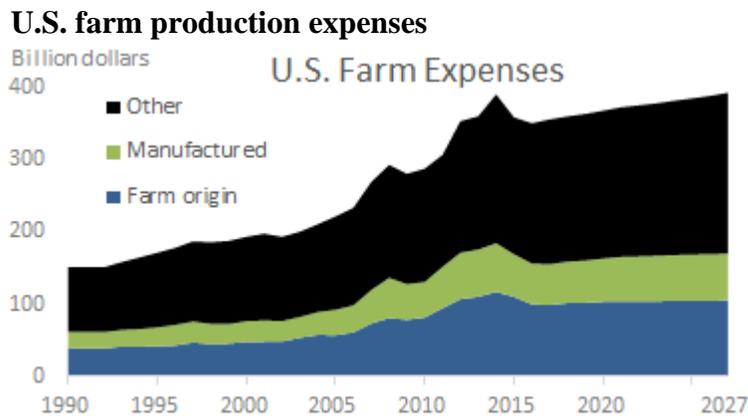
U.S. cash receipts





After falling to \$9 billion in 2019, direct Government payments rise again in 2020 due to an expected shift of producers from the ARC to the PLC program. Government payments are subsequently expected to fall from 2020 to just over \$11 billion by 2027, averaging roughly \$12 billion per year over 2021-27 compared to an annual average of more than \$15 billion from 2001-10. The CRP, ARC, and PLC payments provide the largest direct Government payments to the agricultural sector over the projection period

- Acreage enrolled in the CRP is assumed to be at or slightly less than its legislative maximum of 24 million acres under the 2014 Farm Act. As crop prices begin to rise again, average rental rates for land in the CRP will also increase. CRP payments are therefore projected to gradually increase from \$2 billion in 2017 to \$2.4 billion in 2027.
- Payments under the ARC and PLC programs further decline after 2017 from about \$6.9 billion to just under \$3.3 billion in 2019 due to projected modest crop price increases from 2018 onwards. While these payments fall as crop prices rise, they jump to nearly \$7.2 billion in 2020 as producers are assumed to shift acreage from the ARC program to the PLC program. (For the 2019-2027 projection period, producers are assumed to be provided an opportunity to change their base acre election between the ARC and PLC programs.) The ARC and PLC payments continue to fall over the remainder of the projection period to \$5.2 billion while overall direct Government payments remain relatively steady, ending the decade near where they started at 11.3 billion.



- Total farm production expenses start to rise after 2017 due to increasing expenditures on interest, hired labor, and fuel/oil inputs. Partially offsetting these increases are expected drops in feed and fertilizer/lime expenses. The rise in production expenses is less rapid than the overall rate of inflation through 2027. While expenses for farm-origin inputs, other manufactured inputs, and aggregate expenses for other nonfarm-origin inputs grow slower than the general inflation rate, interest expenses and fuel and oil costs rise faster than the general inflation rate during these years.
- Interest costs rise faster than the general inflation rate over the projection period, reflecting rising farm debt levels as well as increasing interest rates reflecting tightening monetary policy.
- Production expenses for fuel and oil also rise steadily after 2017 due to moderate increases in crude oil prices. Projected declines in planted acreage, anticipated higher domestic nitrogen fertilizer production capacity, and relatively low natural gas prices serve to lower fertilizer expenses in the near term. These costs rise slower than the general rate of inflation in the later years.

Table 24. Farm receipts, expenses, and income, long-term projections

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	<i>Billion dollars</i>											
Cash income statement												
Cash receipts	356.5	365.2	363.9	364.7	364.4	368.2	369.7	372.8	377.1	382.1	385.5	391.5
Crops	193.7	189.9	192.4	194.9	198.2	201.6	204.9	207.9	211.7	215.0	218.0	221.7
Livestock	162.9	175.3	171.5	169.8	166.3	166.6	164.8	164.9	165.5	167.1	167.5	169.8
Direct government payments	13.0	11.2	10.9	9.0	12.9	12.7	12.4	12.4	12.1	11.8	11.6	11.3
Farm-related income	27.9	30.1	34.0	34.2	34.3	34.4	34.5	34.6	34.8	34.9	35.0	35.1
Gross cash income	397.4	406.4	408.8	407.8	411.7	415.3	416.6	419.9	424.0	428.8	432.0	437.9
Cash expenses	304.1	309.5	319.7	325.3	331.1	336.4	340.5	344.1	348.5	352.3	355.9	360.1
Net cash income	93.3	96.9	89.1	82.5	80.6	78.9	76.2	75.7	75.4	76.5	76.1	77.7
Farm income statement												
Gross cash income	397.4	406.4	408.8	407.8	411.7	415.3	416.6	419.9	424.0	428.8	432.0	437.9
Non-money income	17.1	18.3	18.4	19.1	19.7	20.6	21.0	21.4	21.8	22.2	22.6	23.0
Value of inventory change	0.3	-5.7	-0.5	-0.3	0.6	0.6	0.6	0.0	0.7	0.5	0.5	0.8
Gross farm income	414.8	419.1	426.6	426.6	432.1	436.6	438.2	441.3	446.4	451.6	455.1	461.6
Total expenses	350.5	355.8	360.0	363.4	367.8	372.5	375.4	378.1	381.7	385.0	388.4	392.7
Net farm income	61.5	63.3	66.6	63.2	64.2	64.1	62.8	63.2	64.8	66.6	66.7	69.0

The projections were completed in December 2017. History for 2016 and short-term forecasts for 2017 are from USDA-Economic Research Service, December 2017.

Agricultural Trade

Global demand and trade for agricultural products are projected to continue rising through 2027/28, albeit at a slightly slower pace than during the previous decade. Income growth is projected to remain strong, especially in many emerging and developing economies, giving strong impetus for sustained growth in demand and trade for agricultural products.

The developed economies typically maintain stable and steady demand for international agricultural products, even during periods of slightly slower economic growth. Food consumption patterns in the developed economies are more established and exhibit gradual change. The developed countries have slower population growth rates and aging demographics, and changes in income have a relatively smaller impact on food choices, all of which contribute to steady food demand. These large economies provide a solid base for sustained international trade demand for many agricultural products.

Emerging economies and low- to middle-income countries are the major sources of increasing global agricultural trade. Increasing food and feed demand in developing economies are projected to account for most of the growth in world consumption and imports of basic agricultural commodities over the coming decade. Developing countries account for more than four-fifths of the projected increase in global demand for meat, grains, and oilseeds and most of the growth in cotton consumption. Demand for agricultural products in many developing countries increases faster than domestic production as many of them are not well-suited for production of specific commodities, leading to growing imports of agriculture commodities and products.

The populations of developing economies are increasing the fastest. Moreover, these same countries are experiencing strong growth in per-capita incomes, further urbanization, upgraded infrastructures and food chain systems, and better access to modern food markets, all of which leads to changing diets and preferences. Large numbers of previously low-income consumers are spending their higher incomes on more varied and higher-value foods. Urbanization and modern food retailers expose these same consumers to new types of food. Improved transportation and refrigeration infrastructure and food retail chains make it possible for more food options to reach more consumers. The increasing convenience of eating food away from home and cooking food with less preparation time becomes more important as families adopt to the time constraints of living in an urban setting. Combined, these factors contribute to strong growth in world demand for grains, oilseeds, and livestock products.

General International Assumptions

Trade projections to 2027 are based on economic relationships and assumptions concerning trends in area, yields, and consumption. The development and use of technology and changes in consumer preferences are assumed to continue evolving based on their past performance and the consensus judgment of USDA analysts regarding future developments. The projections also reflect the effects of trade agreements, sanitary and phytosanitary restrictions, and domestic policies in place or authorized by November 2017. International macroeconomic assumptions used in the projections were completed in October 2017.

Growth in global agricultural production is sufficient to meet growing global demand and sustain commodity prices throughout the projection period but still at relatively low prices, especially compared to prices in 2011 and 2012. Agricultural production increases due to both yield growth and expansion into new areas of cultivation. This is especially true in Brazil, with expanding new area and also increasing crop yields due to the introduction of new technologies. Agricultural production is projected to increase more rapidly than world population growth, enabling an increase in per capita use of most agricultural products. Together, these trends result in modest increases in the nominal prices of agricultural commodities throughout the projection period, but in real (inflation-adjusted) terms, global prices fall slightly.

World economic growth is projected to increase over the next decade, with a market exchange rate-weighted average annual GDP growth rate of 2.9 percent from 2018 through 2027. Real GDP in developed economies is projected to grow at 1.7 percent annually through 2027/28, while the faster growing emerging economies are projected to grow at about 4.7 percent annually. The fastest projected growing economies are in Asia, with India, Vietnam and Cambodia growing at annual rates of 7.6 percent, 6.0 percent, and 6.3 percent, respectively. Southeast Asia's GDP will rise an average of 4.6 percent annually. China's projected economic growth rate is 5.5 percent. The Middle East and Africa are both projected to grow at 3.5 percent.

The world's population is 7.37 billion in 2017, with a projected annual growth rate of 0.87 percent, roughly 673 million people will be added over the next decade. Population growth is fastest in Africa, with projected annual growth rates of 2.4 percent for Sub-Saharan Africa and 1.6 percent for North Africa. The populations of the largest countries—China and India—will grow at 0.2 percent and 1.0 percent respectively. Population growth has a larger impact on India, which adds 134 million people by 2027/28, while China adds 28 million people.

Growing global consumption drives trade

Growing global demand for agricultural commodities, especially by low-income countries, leads to increasing world imports over the projection period. Expanding trade is expected for all of the projected agricultural commodities. Food grains—wheat and rice—exhibit relatively strong demand in low- to middle-income countries. Wheat, among the world's most traded commodities, is projected to show an increase in trade of almost 16.3 percent over the 10-year projection period, reaching 212.1 million tons by 2027/28. Rice trade is projected to increase by 14.4 percent, increasing to almost 53 million tons by 2027/28. Projected rice imports grow the fastest in West Africa, the rest of Sub-Saharan Africa, and the Middle East; these three regions account for 86 percent of the increase in world rice imports through 2027/28. China remains the world's largest rice importer, but its rice imports decline throughout the projection period. Over the past 3 years, India was the largest rice-exporting country, followed by Thailand and Vietnam. India, Thailand and Vietnam, together will increase exports by 3 million tons over the projection period by 2027/28 and accounting for 46 percent of the global increase in exports.

Wheat is a staple food in many countries and has been used to produce bread and noodles for several centuries, but certain types of wheat products are fairly new to many countries, such as cookies, bread, packaged noodle-based meals, and various desserts. Over the projection period, wheat consumption increases by over 10 percent above current consumption levels in 2017/18. Six countries account for over half of this increase in consumption: India (22 percent), China (14 percent), Egypt (5 percent), and Pakistan, Bangladesh, and Indonesia (which account for a

combined 11 percent). The increased wheat consumption is driven by uses as a staple food, various wheat-based non-staple foods, for livestock feed, and increasing populations. India and China have little impact on wheat trade as consumption increases match the increase in domestic production due to increasing yields and slightly higher area. However, in both countries government policies affect producer planting decisions and may lead to increased area and rising stock levels.

The countries and regions with the greatest increase in wheat imports are those with strong growth in income, population, and urbanization. Many of these regions are unable to produce wheat or expand production. These include Sub-Saharan Africa (especially West Africa), North Africa, the Middle East, and Southeast Asia. These regions combined account for almost 75 percent of the projected increase in world wheat import demand.

World rice consumption increases by 7 percent over the projection period. Two countries account for 47 percent of this increase: India (30 percent) and China (17 percent). After India and China, no single country accounts for a relatively large increase in consumption. The regions with the fastest growth in rice consumption are Sub-Saharan Africa (especially West Africa), the Middle East, and North Africa, with an increase of 29 percent, 18 percent, and 17.5 percent, respectively, over the projection period. These regions contribute 33 percent to the increase in world rice consumption over the projection period but account for about 86 percent of the world's increase in rice imports. Over the projection period, the Economic Community of West African States (ECOWAS, 15 countries in West Africa) accounts for the greatest increase (37 percent) in world rice imports, and Nigeria accounts for the largest increase for any single country in the world at 12.3 percent.

Global soybeans and corn trade

Global soybean trade is projected to increase by 30.5 percent during the projection period, adding 48 million tons and reaching almost 205 million tons by 2027/28. China's soybean imports account for 86 percent of this projected increase. Soybean meal trade increases by almost 18 percent over the projection period reaching 82 million tons by 2027/28. The European Union is the largest soybean meal importer, reaching 20.1 million tons by 2027/28. Vietnam's imports increase by 56 percent over the projection period, accounting for 26 percent of the increase in global imports. Soybean oil trade increases by 27 percent over the projection period, adding 3.3 million tons to trade, reaching 15.4 million tons by 2027/28. India is the largest soybean oil importer and accounts for 33 percent of the projected increase in world imports. Trade in palm and coconut oil expands by almost 24 percent to 70.7 million tons by 2027/28. Malaysia and Indonesia account for almost 90 percent of world exports of these products. The largest importers are India, European Union, China and Pakistan, accounting for over 50 percent of palm oil global imports. The United States and European Union are the world's largest importers of coconut oil accounting for over 60 percent of the global imports.

Global corn trade increases by almost 20.5 percent over the projection period, adding over 32 million tons to trade, boosting export volume to 189 million tons by 2027/28. Mexico, Egypt, China, Vietnam, and Iran account for a little over 67 percent of this increased import demand. Projected global sorghum trade increases by almost 25 percent to 9.7 million tons by 2027/28. China is projected to increase sorghum imports by 1.4 million tons, reaching 6.8 million tons by 2027/28. World sorghum trade was largest in 2014/15, at 12.2 million tons, due to increased imports by China, which accounted for 83 percent of world sorghum imports at the time. Barley trade expands over the projection period by about 15 percent, driven mostly by increasing feed

demand in the Middle East and North Africa, accounting for 75 percent of increasing imports. Barley trade is projected to increase to 31.6 million tons by 2027/28, which surpasses the record of 30.8 million tons established in 2015/16. The largest importer is Saudi Arabia at 11 million tons by 2027/28, accounting for almost 35 percent of global imports.

Cotton trade increases throughout the projection period and by 2027/28 reaches 57.4 million bales, surpassing the record of 46.3 billion bales set in 2012/13. As China completes its disposal of surplus stocks, the country's cotton imports are projected to increase, reaching 19.5 million bales by the end of the projection period. Vietnam, Bangladesh, Turkey and Indonesia are the next largest cotton-importing countries and are also projected to increase imports.

Global meat consumption

Growing global meat consumption is the major driver for increasing production and expanding trade for numerous commodities, including coarse grains, oilseeds, and livestock and meat products. Consumption of poultry meat, the lowest priced of the three major types of meat, increases at the fastest rate—2.0 percent annually. Global pork consumption growth is slightly stronger than beef at an annual rate of 1.2 percent compared to 1.0 percent, respectively.

Over the projection period, global meat (beef, pork, and poultry) consumption increases by 14 percent, which increases trade by 7.1 million tons. Developing and emerging economies account for over 80 percent of this increased consumption; however, this share drops to 57 percent when excluding China. The five countries accounting for the largest share of increased meat consumption over the projection period are China (27.5 percent), Brazil (8.5 percent), India (7.8 percent), Mexico (5.2 percent) and the United States (4.5 percent).

The regions with the fastest annual meat consumption growth rate over the projection period include Sub-Saharan Africa (2.7 percent) (especially West Africa), North Africa (2.4 percent), Southeast Asia (2.2 percent), the Middle East (2 percent) and Central America and the Caribbean (1.9 percent). Over the projection period, these five regions' combined increase in meat consumption is 22.8 percent of the global growth in meat demand. Meat imports by these five regions increase by 3.2 million tons, accounting for about 33.4 percent of their increased meat consumption. The rest comes from increased domestic production. These five regions account for almost 45.0 percent of increased global meat imports through 2027/28.

Per capita meat consumption is quite low in the lower-income countries, which helps to account for their faster consumption growth rates. High-income countries consume up to 10-15 times the quantity of meat on an annual per capita basis than many low-income countries, and even up to 25 times more than the lowest income countries in the world. Global per capita meat consumption remains low compared with levels in higher income countries—an indication of the potential for continued growth in world meat consumption.

The countries and regions with the projected slowest annual growth in meat consumption include the European Union (0.11 percent), Japan (0.25 percent), Canada (0.5 percent), the United States (0.7 percent), the Former Soviet Union (0.92 percent), Argentina (1.24 percent), and Australia (1.7 percent). These countries already have high per-capita rates of meat consumption and slow projected growth in population, urbanization and consumer income. The combined increase in meat consumption is 11.3 percent of the world's projected increase in meat consumption.

China, Brazil, India, and the United States account for almost half (48 percent) of the increase in global meat consumption by 2027/28. The large and growing populations of these countries significantly contribute to large increases in global meat consumption. China alone accounts for almost 28 percent of increase in world meat consumption over the projection period. However, increasing meat consumption does not necessarily lead to increasing meat imports. In these four countries, increased consumption is mostly matched by increased domestic production. China's meat consumption increases by over 10 million tons, but imports increase by just 867 thousand tons. In Brazil, the United States, and India, meat production grows faster than consumption, which allows these three countries to increase their meat exports.

Poultry trade expands the most among livestock products as it is a lower-cost source of meat protein. Poultry exports by the major supplying countries increase by almost 28 percent, reaching almost 14.0 million tons by 2027/28, adding 3 million tons over the projection period. Beef exports by the major beef-exporting countries expand by 20 percent, reaching almost 11.4 million tons and adding 1.9 million tons to trade by 2027. Major pork exporters expand trade by over 18.5 percent, reaching more than 9.5 million tons by 2026, adding almost 1.5 million tons to exports.

Increasing feed demand and trade

International trade in basic agricultural commodities such as corn, soybeans, and soybean meal is driven by increasing feed demand for poultry and pork production, a consequence of growing meat demand and consumption, particularly in poultry and pork. Global meat consumption continues to rise throughout the projection period. Corn and soybean meal are the major agricultural commodities used to feed livestock. Many countries are not well suited to growing corn and soybeans or are unable to expand production to meet increasing domestic demand for feed. As a result, numerous regions exhibit strong annual growth rates in corn imports over the projection period, including Southeast Asia (3.3 percent annual growth rate), North Africa (3.3 percent), the Middle East (2.1 percent), Sub-Saharan Africa (2.7 percent), South America excluding Brazil and Argentina (2.9 percent), and Central America (2.6 percent). The increase in corn imports for these regions is a combined 23.1 million tons over the projection period.

Southeast Asia's corn imports are increasing due to its fast growing meat sectors, mostly poultry and pork. Over the projection period, Southeast Asia's annual corn demand increases by 5.3 million tons, accounting for 16.4 percent of increased world trade by 2027/28. Southeast Asia's projected imports of soybeans and soybean meal for feed use are increasing at annual rates of 2.4 percent and 2.3 percent respectively. Southeast Asia accounts for 47 percent of the increase in global imports of soybean meal over the projection period. South America is also expanding meat production, leading to increasing corn imports of 3.8 million tons by 2027/28. Together these five regions—Africa, Middle East, South East Asia, South America, and Central America—account for almost 72 percent of the world's increase in corn imports over the projection period.

Biofuels

Global expansion of biofuel production is projected to continue during the next decade, although at a significantly slower pace than over the last half decade. As a result, demand for biofuel feedstocks also continues to grow, but more slowly.

The top three biofuel producers will remain the United States, Brazil and the EU. Also among the largest producers, China, Argentina, Thailand, Canada, and Indonesia grow but remain considerably smaller than the top three. Another 15 relatively minor producers account for nearly all remaining global biofuels production. Reduced use of corn for ethanol production in the U.S.

and potentially the EU is offset by increased production of corn-based ethanol in China, Argentina, Brazil, Paraguay and some other countries. Aggregate demand for wheat and other coarse grains as ethanol feedstock, mostly in the EU and Canada, is flat to declining. Strong growth for sugarcane and molasses used in ethanol continues and principally depends on Brazil's ethanol market, but India, Thailand, Argentina, Colombia, the Philippines and several other countries also drive demand. The growing biodiesel industries of Indonesia, Thailand and Malaysia depend on palm oil. Demand for soybean oil used for biodiesel rises in the United States, Brazil, and Argentina. Demand for other food-based, oilseed and starch biofuel feedstock is expected to be relatively minor and flat, while demand for waste-stream feedstock (i.e. used cooking oil, bagasse and cellulosic biomass) is expected to grow.

Following the United States, Brazil, Canada, the EU and Japan remain the world's largest importers of biofuels throughout the projection period. The United States continues to import more biodiesel and renewable diesel than ethanol. Biodiesel imports from Argentina are sharply reduced from recent levels due to countervailing and anti-dumping duties imposed and Canada becomes the main supplier. Singapore continues to supply renewable diesel to California. Brazil does not import biodiesel, but its ethanol imports supplied solely by the United States rise as its market grows. Ethanol-accounts for two-thirds of Canada's biofuel imports currently, but that share is expected to fall since biodiesel and renewable diesel have more expansion potential. The United States supplies nearly all of Canada's ethanol and biodiesel imports, while Singapore and the Netherlands supply most of Canada's renewable diesel imports. The EU's imports of ethanol are expected to stagnate, but biodiesel and renewable diesel have some room for expansion at least through 2020. Japan's entire biofuels program continues to rely ethanol imported as ETBE.

The United States and Brazil are the world's two largest fuel ethanol exporters. U.S. shipments expand and are diversified across many markets including Brazil and Canada followed by India and the Philippines, while most Brazilian exports target the United States. Argentina and Indonesia have been the largest exporters of biodiesel, followed by Malaysia and Canada. The former are expected to remain the largest suppliers over the projected period, but EU and U.S. countervailing and anti-dumping duties actions suppress sales to levels closer to Malaysian and Canadian levels. Singapore remains the largest renewable diesel exporter by a wide margin, and even doubles exports as production expands.

Crop production continues to expand through 2027/28

Global crop production has continued to increase for most commodities over the past 3 to 4 years, despite lower commodity prices. In the past 5 years coarse grain production has increased an average of 3.3 percent per year, which mostly reflects increasing yields for most crops. World corn production reached a record level in 2016/17, at almost 1,075 billion tons, which is an increase of 28.5 percent from 2010/11 or an additional 240 million tons. The largest producing countries have all contributed to increasing global corn production during the past 5 to 6 years. Increases in production are due to both expanding area and increasing yields. Global corn area harvested and yields expanded by a little over 13 percent from 2010/11 to 2016/17. The United States, China, Brazil, Argentina, and the European Union accounted for 75 percent of the global corn production in 2016/17. Global corn production is projected to increase by almost 13.5 percent from 2018/19 to 2027/28, mostly due to increasing yields.

Global production of wheat and rice have consistently established record levels, reaching 750 million tons and 487 million tons in 2016/17, respectively. The European Union, China and India accounted for almost 50 percent of the world's wheat production in 2016/17. Russia, the United

States, and Canada accounted for an additional 22 percent of the world's share in wheat production. Global wheat production is projected to increase a little over 9 percent by 2027/28. Eight countries accounted for over 80 percent the global rice production in 2016/17. Over 50 percent of global rice production is from China and India; the next six largest rice producing countries, Indonesia, Bangladesh, Vietnam, Thailand, Burma, and the Philippines, contribute about 30 percent to world rice production. Global rice production is projected to increase 7 percent by 2027/28, which is driven mostly by increasing yields, with expanding area in some countries.

Oilseed and palm oil production have exhibited the strongest growth over the past six years. Global soybean production increased from 264.4 million tons in 2010/11 to 351 million tons by 2016/17 -- almost a one-third increase. The United States, Brazil and Argentina accounted for 82 percent of the world's soybean production in 2016/17. Increased production by Brazil and the United States account for 45 percent and 30 percent, respectively, of the increase in global soybean production, since 2010/11. Global soybean production is projected to increase by 26 percent by 2027/28. Both soybean area and yields increase over the projection period at 15 percent and 9.5 percent, respectively, from 2018/19 to 2027/28.

Brazil: Export projections and prospects for economic recovery

For Brazil, the year 2017 was marked by change, as the prospects for renewed economic growth improved following the country's worst recession in decades. With GDP growth in 2017 at nearly 1 percent and projected 1.6 percent growth for 2018, Brazil's economy is on the path to recovery from the steep recession that began mid-2014 and lasted through 2016, when GDP contracted 3.4 percent after shrinking 3.8 percent in 2015. During the recession, the strength of Brazil's agricultural sector served as a counterbalance to the slowing of Brazil's economy.

Brazil's agricultural export growth is tied to soaring demand in China and the strength of its currency, the *Real*, relative to the currencies of Brazilian competitors and markets. For the country's agribusiness sector, a depreciating *Real* beginning in 2015 contributed to high export earnings and gains in export competitiveness, which partially compensated for the burden of high inflation and higher interest rates. As a result, primarily due to production increases and productivity gains, during the recession, Brazilian agriculture turned in a positive contribution to GDP growth. In addition, the sector's demand for inputs, fertilizer, and machinery helped reduce the impact of the recession on the industries and services sectors. Agriculture represents 20 percent of total GDP, employs 21 percent of the working population (CEPEA, 2017), and accounts for 46 percent of total merchandise exports (GTIS, 2017). Open trade, flexible exchange rate regimes, and the development of new tropical varieties suitable to Brazil's *Cerrados* area have helped Brazil become one of the world's top producers and exporters of soybeans, corn, cotton, and meats.

Brazil's Macroeconomy

Brazil has experienced many economic crises and the country's economic history is punctuated by economic volatility. The economic successes of the 1960s and 1970s, both exceptional and significant for agriculture, were followed by periods of rising inflation and recession throughout the 1980s and early 1990s, only to regain rapid growth following the launch of the *Plano Real* in 1994. During the 1994-2004 period, stabilization efforts were grounded in an inflation targeting policy, paired with a flexible exchange rate and the fiscal discipline engendered by the Fiscal Responsibility Law (FRL). During this period, Brazil's macroeconomic environment became less volatile up until mid-2014, when Brazil's economy deteriorated (figure 1.)

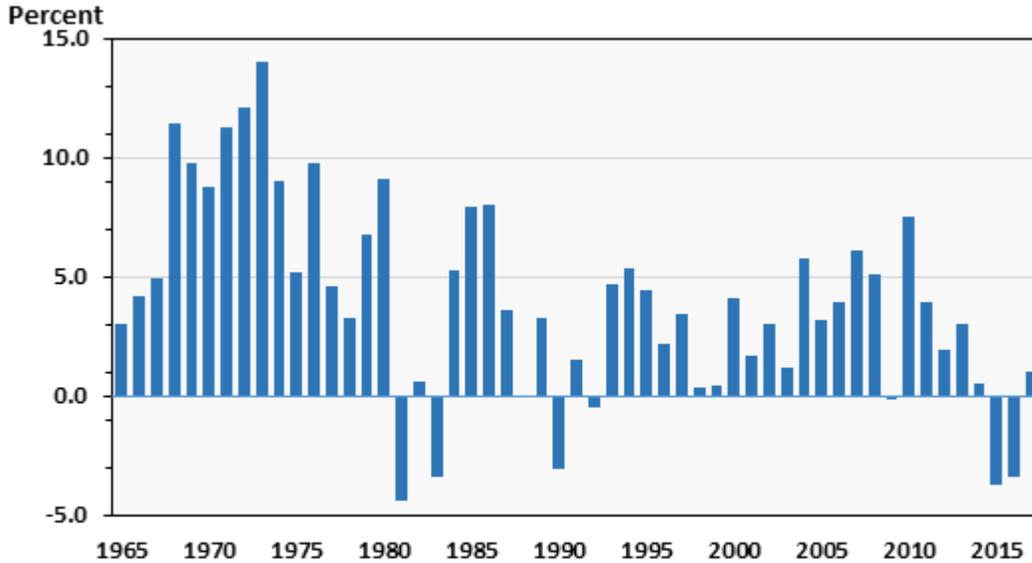
During 2004-14, annual GDP growth averaged 3.7 percent, compared to 1.9 percent in the previous 7 years (figure. 1). However, counter-cyclical fiscal measures adopted during the 2008-09 global financial crisis raised the net public sector debt-to-GDP ratio from 28 percent in 2004 to 43 percent in 2009. Following the global economic crisis, the incoming Rousseff government combined an injection of liquidity into the banking system with a reduction in interest rates, and an expansionary fiscal policy. Violation of the FRL ultimately led to the May 2016 impeachment of President Rousseff. By the end of 2015, Brazil's economy had deteriorated dramatically with GDP contracting by 3.8 percent in 2015, while annual inflation reached 10.7 percent. According to a 2017 report by Brazil's central bank, a devaluation of 42 percent in 2015 boosted local currency export revenues.

USDA's long-term projections to 2027 reflect the continuing depreciation of the *Real* through 2022 and a slight appreciation thereafter through 2027. GDP growth rises to an average 3.3 percent per year during 2019-23, followed by a 3.1 percent annual growth through 2027. Consequently, 5 million hectares of new land is brought into production, while double cropping increases total harvested area by 17 million hectares during the projection period, or about 25 percent of current cropland area. Brazil's output of soybeans, soybean products, corn, barley, sorghum, rice, and wheat is expected to rise by more than 55 percent to reach 341 million tons in 2027.

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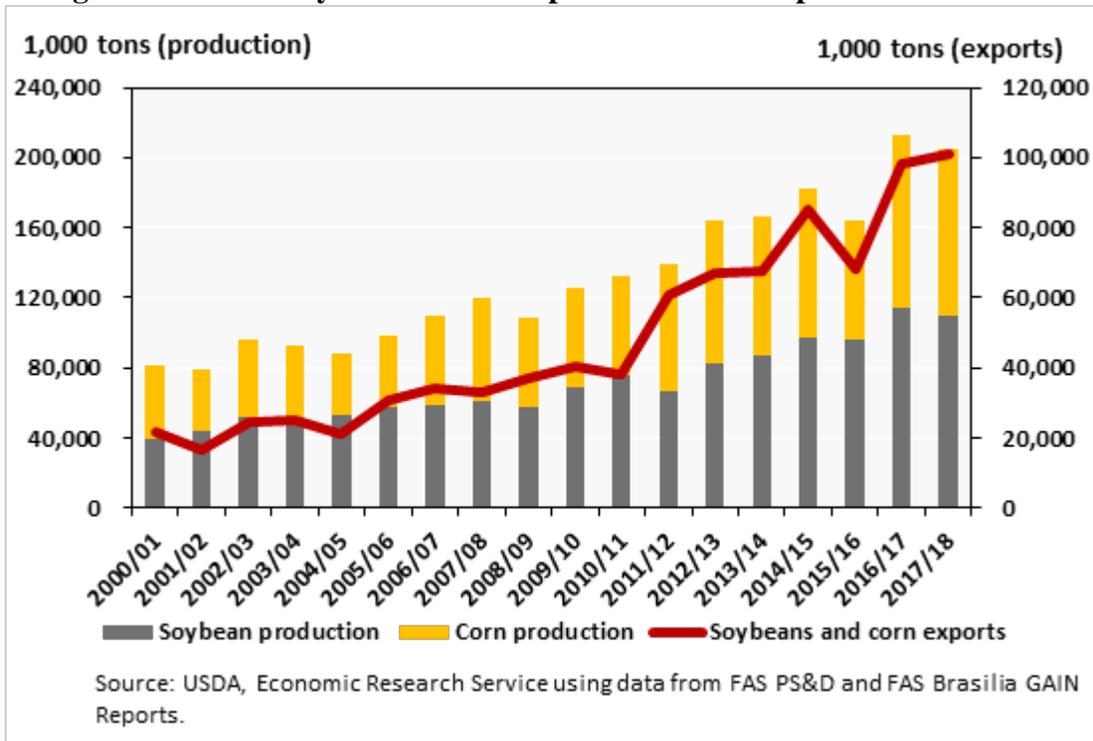
Brazil: Export projections and prospects for economic recovery -- Continued

Figure 1. Brazilian GDP growth



Source: USDA, Economic Research Service using data from World Bank, World Development Indicators.

Figure 2. Brazil's soybeans and corn production and exports

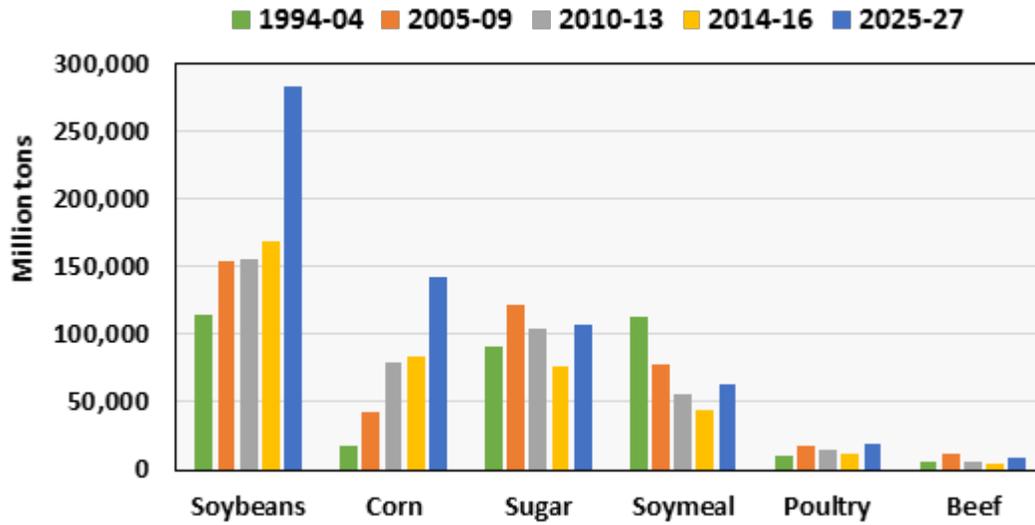


Source: USDA, Economic Research Service using data from FAS PS&D and FAS Brasilia GAIN Reports.

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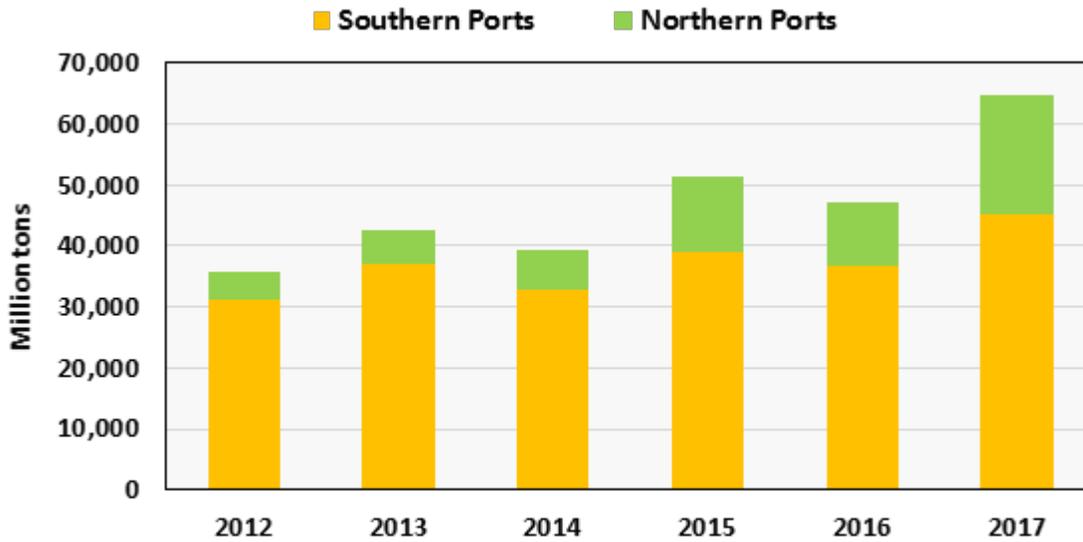
Brazil: Export projections and prospects for economic recovery -- Continued

Figure 3. Brazil: Historical and projected exports



Source: USDA, 2018 Baseline Projection Results.

Figure 4. Increased shipments of soybeans and corn through Northern Ports, reduce transportation costs



Source: Secretaria de Comércio Exterior. Portal Siscomex. Estatísticas 2017.

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Brazil: Export projections and prospects for economic recovery -- Continued

Brazil's Growing Importance for World Agriculture

Brazilian farm output has been expanding rapidly with an annual average growth of 4.3 percent between 1970 and 2017, equivalent to a six-fold increase in gross agricultural production, and one-fifth of global food production (FAO, 2017). The rapid expansion in agricultural supply has allowed Brazil to become the world's third largest agricultural exporter, accounting for 6 percent of global agricultural exports (GTIS, 2017). Fueled by increasing global demand (particularly demand from China), the value of Brazilian agricultural exports in 2017 has reached over \$81 billion. Major markets include the European Union, China, the United States, Russia, Japan, and Middle Eastern countries (GTIS, 2017).

As a result of gains in yields and ample area, oilseed and grain production grew 6 percent annually between 2000 and 2017 (figure. 2). Brazil is now the world's second largest soybean producer after the United States, accounting for 31 percent of world production, and the world's third largest corn produce —after the United States and China, accounting over 9 percent of world production. With the growth in production creating surpluses for export, Brazil emerged as a major oilseed and grain exporter. During 2000-17, Brazil exported on average 34 million tons of oilseeds a year, supplanting the United States as the world's largest soybean exporter. During this same period, Brazil averaged 14 million tons of corn exports annually, becoming the world's second largest corn exporter (figure. 2).

Trends in Exports and Imports

Between 1960 and 1990, Brazil was a large and consistent net exporter of various agricultural products. In more recent years, Brazil's trade position has undergone large swings. Net exports were positive and relatively steady between 1980 and 1990 (GTIS, 2017). Exchange rates were a significant factor in the year-to-year shifts in Brazilian agricultural trade. After the Asian financial crisis of 1997-98, Brazil relinquished the peg with the dollar in January 1999, and the *Real* depreciated significantly against the dollar. The newly favorable exchange rate helped Brazil reap the benefits of the policy reforms of the previous 15 years and increase agricultural exports significantly.

Partly in response to the strengthening exchange rate, the Government moved to increase support to Brazilian agriculture with price supports and large amounts of subsidized credit during 2004-14 (BCB, 2017). During the mid-2014-2016 economic recession, the devaluation of the *Real* contributed to gains in export competitiveness. The Brazilian government provides traditional forms of domestic agricultural support to major field crops (credit at preferential interest rates, price and marketing support), but also has policies specifically designed to support biofuels. These include ethanol supply contracts, variable federal and state taxes on ethanol, biodiesel, gasoline and diesel, price floors at biodiesel auctions, lines of credit for the sugar/ethanol industry, import duties, and mandated blending rates which have been set at E27 for gasoline since March 2015 and B8 since March 2017.

Improvements in Brazil's Infrastructure Support Rising Export Volumes

With Brazil's production and exports of agricultural commodities expected to significantly increase throughout the next decade, transportation infrastructure and port expansion have been a priority since 2010. Changes in the country's regulatory framework have facilitated public-private partnerships in road and rail expansion and investments in port capacity. In particular, new developments in the Center-West agricultural frontier, where more than two-thirds of the soybeans and corn are produced, have facilitated the transport of commodities to the north (a much shorter distance than transport to Southern ports), thus lowering export costs and delivery times (figure 4).

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Brazil: Export projections and prospects for economic recovery -- Continued

Brazil's Projection Highlights

Soybeans: Brazil has been a major soybean producer since the 1970s. While Brazilian average soybean yields reflect increases in productivity, much of Brazil's growth in soybean production has come from a dramatic increase in harvested area and the westward expansion of the production frontier. Since Brazil surpassed the United States in 2012, it has been the leading soybean exporter. Brazil and U.S. soybean exporters compete for the Chinese market and export competition is expected to continue during the projection period. USDA projects that Brazil's soybean production and exports will continue to rise over the next decade. Total soybean production increases by an additional 55 million tons, to reach 163 million tons in 2027/28. Brazil's exports of 96.4 million tons in 2027/28 are 48 percent higher than current exports.

Corn: Brazil's corn production has risen rapidly over the past 15 years. The country has evolved into one of the world's leading corn producers, the second largest exporter, and a competitor of the United States. Brazil's corn production has risen in response to new high yielding varieties, the introduction of GMO corn, a shift of corn production to higher yielding frontier producing regions of the country, the country's climatic ability to produce two crops in the same year, and some government support. Production expansion has exceeded the rate of increase in domestic consumer demand, leaving surplus production for more exports. To meet domestic and export demand, total corn production in Brazil increases by 35 million tons to just under 130 million tons in 2027/28. Corn exports are expected to rise 2.8 percent per year to reach 44.8 million tons by the end of the projection period.

Cotton: Brazil is one of the world's leading cotton producers and an important competitor of the United States in terms of cotton trade. Cotton yields in Brazil have risen the fastest in recent years. As a result of rapid improvements in agricultural technology, Brazil's cotton yields have surged, surpassing yields in the United States and the world average cotton yields. Over the next decade, Brazil's cotton industry is expected to keep evolving to meet increased domestic consumption and foreign demand. In particular, shifts in production patterns, increased use of new technologies, increased investments in new mills, and greater competition within the sector are likely to occur over the next few years.

Meats: Brazil is the world's largest beef exporter and second largest beef producer after the United States. USDA projects that Brazil's beef production and exports will continue to rise over the next decade. Total beef production in Brazil increases by 2 million tons to nearly 12 million tons in 2027/28. Beef exports are expected to rise 4.7 percent per year to reach 2.9 million tons by the end of the projection period. Brazil's broiler industry growth in recent years has led the country to become one of the world's leaders in the industry. Exports have increased fivefold since 2000 with Brazil, in recent years, overtaking the United States as the world's largest chicken meat exporter. USDA projects that Brazil's broiler production will reach 19 million tons in 2027/28. Brazilian broiler exports are projected to rise 4.2 percent per year to reach 6.6 million tons by the end of the projection period.

Sources:

(BCB, 2017) Banco Central do Brasil. Indicadores de Conjuntura, 2017.

(CEPEA, 2017) Centro de Estudos Avançados em Economia Aplicada, ESALQ/USP. "PIB do Agronegócio." 2017.

(FAO, 2017) Food and Agriculture Organization of the United Nations, "FAOSTAT Agricultural Databases." Rome.

(GTIS, 2017) Global Trade Information Services, *World Trade Atlas*, 2017.

Secretaria de Comércio Exterior . Portal Siscomex. *Estatísticas 2017*.

FSU: Grains exports continue to expand

During the 1980's, the Soviet Union was a large importer of grain (figure 1), as well as of soybeans and soybean meal. The imports were used as feed by the country's growing, and heavily subsidized, livestock sector. The collapse of the USSR and move by its successor states from centrally planned to market economies largely eliminated the hefty subsidies to their livestock sector, resulting in its severe contraction. This downsizing and corresponding plunge in demand for animal feed during the 1990's generated a major decline in grain output, especially by the region's three main producers of Kazakhstan, Russia, and Ukraine (the KRU countries), and essentially terminated the region's grain imports.

Around 2000, grain production in the KRU countries began to increase steadily (figure 1). Average annual KRU collective grain output rose from 111 million metric tons (mmt) in 1997-2001 to 193 mmt in 2013-17. Growing production created surpluses for export, especially of wheat. In 2013-17, average annual KRU grain and wheat exports equaled 82 and 47 mmt, respectively, 21 and 27 percent of total world exports of these products (figure 2).

KRU grain output rose mainly because of an increase in yields rather than area. From 1997-2001 to 2013-17, KRU average annual grain area expanded by only 9 percent, while yields rose by 61 percent. One reason for the yield increase was a rebound in fertilizer use, which had plunged during the 1990s. From 2000 to 2016, fertilizer application per hectare of grain area rose by 150 percent in Russia and 640 percent in Ukraine. Over the same period, fertilizer use for corn – the most fertilizer-intensive grain –increased about 10-fold in Ukraine, the main corn producer in the KRU, and a major world corn exporter. Another factor was the use of higher quality seeds and machinery, much of it imported.

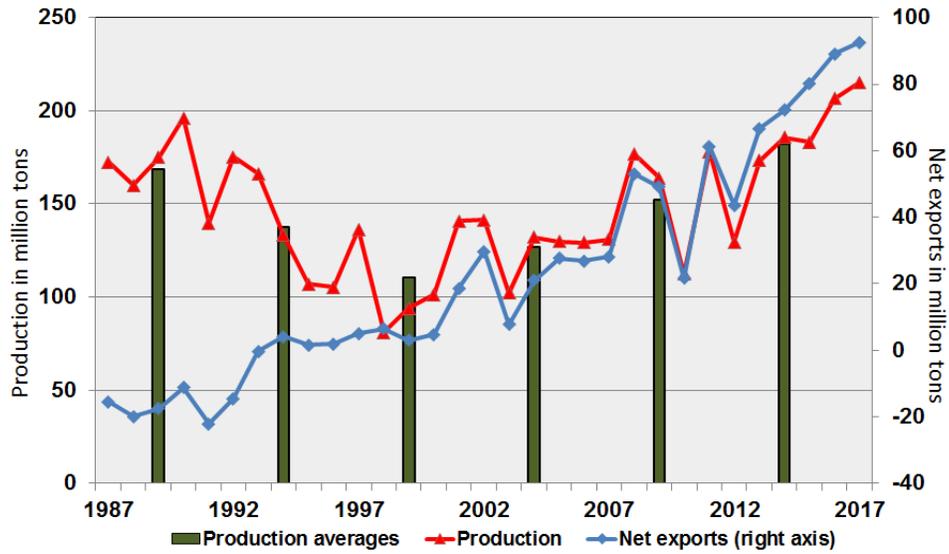
A more general driver of rising yields since 2000 has been the development of a new type of agricultural producer, called "new operators." These apparently more progressive producers have responded to the new market opportunities for agriculture by cutting waste and other costs and becoming more profit-oriented and efficient (especially compared to the unreformed large farms inherited from the Soviet period). A subcategory of the new operators are large agroholdings, which are vertically-integrated enterprises that typically combine primary production, processing, and distribution

State policy also helped drive yield growth during the 2000s, as all three KRU governments increased agricultural subsidies. In Russia the subsidies favored the livestock sector, though not in Ukraine and Kazakhstan, and even Russian crop producers benefited from the subsidies to some degree. Lastly, the KRU countries suffered severe macroeconomic downturns in 1998-99, which substantially depreciated their currencies against the U.S. dollar and other major currencies. The depreciation promoted grain production and export during the 2000's, by improving the countries' grain export price competitiveness on the world market.

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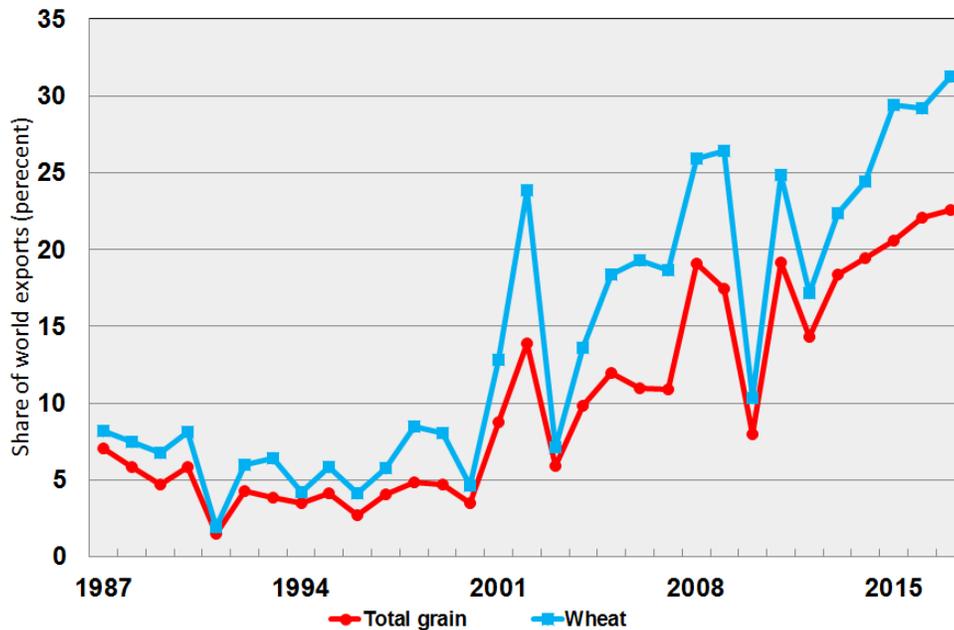
FSU: Grains exports continue to expand --Continued

Figure 1. KRU grain production and exports



Note: KRU is Kazakhstan, Russia, and Ukraine (combined). The bars give average annual grain production over the periods 1987-1991, 1992-96, 1997-2001, 2002-06, 2007-11, and 2012-17. Source: State Statistics of Kazakhstan, Russia, and Ukraine; USDA PS&D.

Figure 2. KRU region supplies a large share of world grain exports

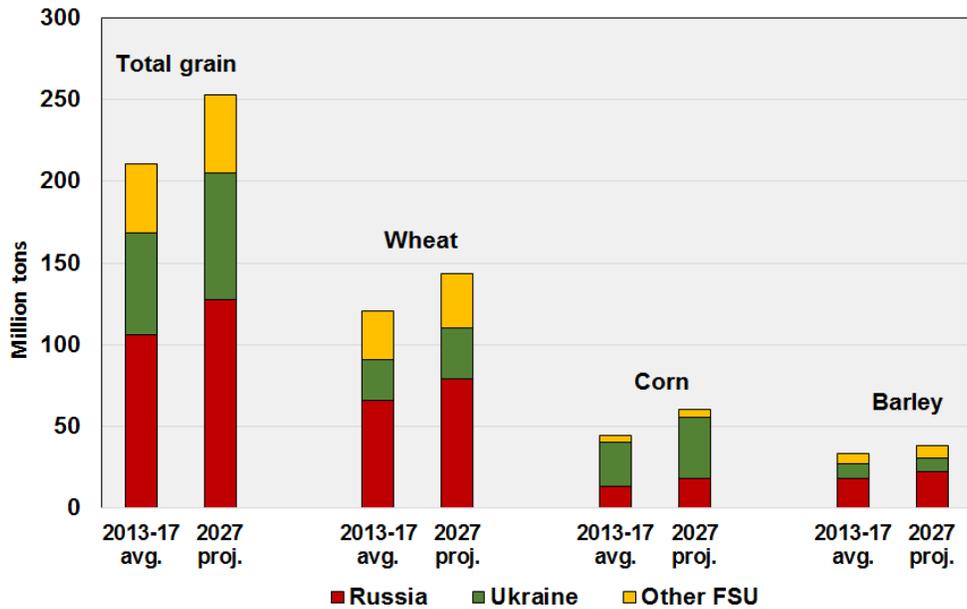


Note: KRU is Kazakhstan, Russia, and Ukraine (combined). Exports are gross. Source: USDA PS&D.

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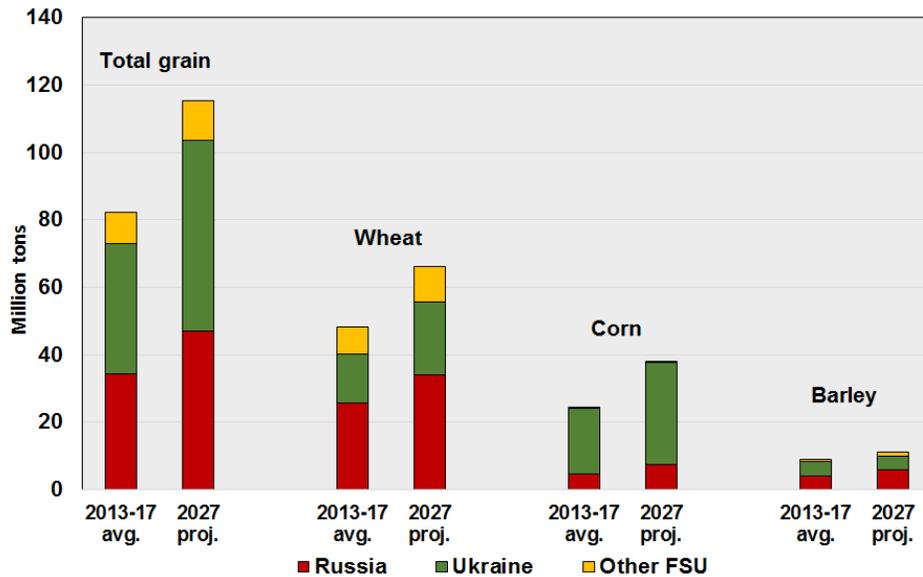
FSU: Grains exports continue to expand --Continued

Figure 3. FSU grain production



Note: Total grain excludes buckwheat, mixed grains and triticale, and pulses. Avg. figures give average annual production over the period. Proj. figures give projected production. Source: For 2013-17, USDA PS&D.

Figure 4. FSU grain exports



Note: Total grain excludes buckwheat, mixed grains and triticale, and pulses. Avg. figures give average annual exports over the period. Proj. figures give projected exports. Source: For 2013-17, USDA PS&D.

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FSU: Grains exports continue to expand --Continued

USDA expects that KRU grain production and exports will continue to rise over the next decade. Specifically, USDA projects that grain output in the countries of the former Soviet Union (the FSU, though excluding the three Baltic States of Lithuania, Latvia, and Estonia) will increase by 20 percent from the average annual level over 2013-17 of 211 mmt to 253 mmt by 2027 (figure 3).¹ Grain output is expected to rise in all three KRU countries. Total FSU wheat production is projected to grow from an annual average of 121 mmt during 2013-17 to 144 mmt in 2027, or almost by 20 percent, and FSU corn output from 44 to 60 mmt (36 percent). 62 percent of projected FSU corn output in 2027 comes from Ukraine (37 mmt). Most of the FSU/KRU grain output growth is expected to arise from an increase in yields rather than area.

The rise in FSU/KRU grain production will generate even higher surpluses for export. USDA projects that FSU grain exports will grow from an average annual of 82 mmt during 2013-17 to 114 mmt by 2027 (figure 4), an increase of almost 40 percent. Ukraine's total grain exports are projected to rise by more than Russia's, in both relative and absolute terms, with Ukrainian 2027 exports accounting for about half of total FSU grain outflows. FSU wheat and corn exports are expected to grow between the periods by 33 and 62 percent to 64 and 39 mmt, respectively. By 2027 Ukraine alone is projected to be a major corn exporter of 32 mmt tons.

The expected growth in KRU grain yields and output over the projection period reflects the continuation of the progressive developments in the KRU grain economies discussed earlier that began around 2000. Continued improvement in farm management and performance will further raise input productivity and yields. The KRU countries are expected to reduce further the gap between their grain yields and those in developed Western countries. For example, a 2013 study by the European Commission found that grain yields in southern European Russia were less than half those in the United States on land with similar soil and agro-climatic conditions, while yields in Russia's Volga, Urals, and Siberian regions were about half those in Canada (on land with similar conditions). Another 2013 study by the European Commission found that Ukraine has the potential to increase grain yields by 10-40 percent.

However, some concern exists over the KRU's reliability as grain export suppliers. One source of KRU export unreliability is volatile weather, with adverse conditions (such as high temperature or low precipitation) reducing the domestic surpluses available for export. Figure 1 shows how closely the annual volumes of KRU grain exports track the weather-driven fluctuation in production. KRU trade policies (in particular export restrictions) also contribute to their grain export volatility. A common catalyst for the export controls is the reduced domestic harvests from poor weather, which motivate governments to keep grain within the country. The controls are intended to mitigate the rise in domestic grain prices, and thereby help domestic food consumers and the feed-consuming livestock sector. For example, prompted by a poor harvest in 2010, the Russian government banned all grain exports from August 2010 through June 2011. During the surges in world agricultural and food prices in 2007-08 and 2011-12, all three KRU countries imposed various types of temporary controls (taxes, quotas, or complete bans) on grain exports.

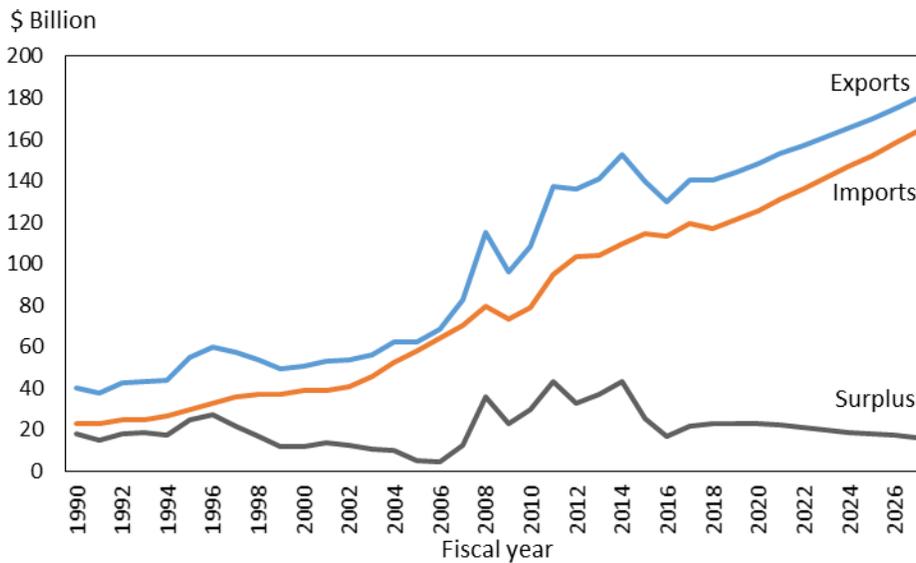
¹ The Other FSU countries in figures 3 and 4 cover the 10 countries of the former Soviet Union, after excluding Russia, Ukraine, and the three Baltic States. The USDA models that generate the projections do not break Kazakhstan out as an individual country; rather, Kazakhstan is grouped with nine other states of the former Soviet Union—Armenia, Azerbaijan, Belarus, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, and Uzbekistan. During 2013-17, Kazakhstan accounted for 44 percent of Other FSU grain production and 86 percent of Other FSU grain exports.

U.S. Agricultural Trade Projections

The value of U.S. agricultural exports is expected to fall slightly in fiscal year 2018, but then grow over the rest of the decade at 2.8 percent per year. Sustained growth in agricultural exports reflects strengthening agricultural demand and steady global economic growth, while domestic economic growth and steadily growing demand for a diverse set of agricultural goods drives increases in the value of imports.

- Crop prices are expected to rise slowly but steadily throughout the projection period. Though cattle prices are expected to fall, many animal product and livestock prices will stabilize and rise over the next ten years. The result is a slow and steady increase in the value of U.S. agricultural exports. Economies around the world continue to grow, with developing countries maintaining a higher growth rate than the developed countries. This growth helps drive the increase in exports. The U.S. dollar continued to strengthen in 2017. The dollar is expected to fall in 2018 and then remain relatively strong throughout the remainder of the projection period. While a strong dollar serves to reduce export demand, U.S. export values are expected to surpass the 2014 record level in the second half of the decade.
- The top U.S. export commodities to the world are bulk items such as soybeans, corn and wheat. However, exports of high-value products, including horticultural and animal products, will continue to grow as a share of total exports, up to nearly 70 percent (by value) by 2027.

U.S. agricultural trade value, by fiscal year



-- Continued

U.S. Agricultural Trade Projections -- Continued

- Growing consumer incomes coupled with a demand for a wide variety of food drives increases in U.S. agricultural imports over the projection period. Throughout the next ten years, the value of imports rise, surpassing \$163 billion by fiscal year 2027, up from \$119 billion in 2017. The highest growth commodity sector is expected to be horticultural products, at nearly 4 percent per year, and largely driven by fresh fruit and vegetable sales. The United States largely imports products that are not widely grown domestically or are out of season, as well as high-value products for which demand tends to respond less to changes in the value of the dollar.
- The 2017 fiscal year ended with a trade surplus of \$21.3 billion. In the short term, the trade balance is expected to increase, but then trend downward as the growth of agricultural imports start to slightly outpace agricultural exports in the longer term. By the end of the projection period, the trade surplus is expected to be more similar to fiscal year 2016 with smaller surplus as a percentage of total exports.

U.S. Agricultural Trade Projections -- Continued

Table 25. U.S. agricultural trade long-term projections, fiscal years

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Billion dollars</i>												
Agricultural exports (value):												
Livestock, poultry, and dairy	25.5	28.9	29.5	29.7	30.6	32.3	33.8	35.0	36.0	37.2	38.5	39.7
Livestock and meats	16.4	18.7	19.1	18.5	19.0	20.0	20.8	21.4	21.8	22.4	22.9	23.4
Dairy products	4.5	5.3	5.6	5.9	6.1	6.4	6.7	7.0	7.4	7.7	8.1	8.5
Poultry products	4.6	4.9	5.0	5.2	5.5	5.9	6.3	6.5	6.8	7.1	7.4	7.7
Grains and feeds	29.6	30.4	29.4	30.6	31.2	32.3	33.0	33.8	34.6	35.2	36.0	36.9
Coarse grains	10.8	10.8	9.4	9.8	9.9	10.3	10.4	10.7	11.0	11.2	11.6	11.9
Feeds and fodder	7.4	7.2	7.5	7.8	7.9	8.2	8.4	8.5	8.7	8.8	9.0	9.2
Oilseeds and products	29.5	32.9	33.1	33.5	34.1	34.7	34.9	35.7	36.4	36.7	37.1	37.4
Soybeans and products	25.4	28.8	28.9	29.3	29.8	30.3	30.5	31.1	31.8	32.0	32.4	32.7
Horticultural products	32.9	33.9	34.5	36.5	38.2	39.6	40.7	42.0	43.4	45.0	46.9	48.8
Fruits and vegetables, fresh	7.0	7.2	7.0	7.2	7.4	7.5	7.5	7.6	7.8	8.0	8.3	8.5
Fruits and vegetables, processed	7.4	7.4	7.5	7.6	7.6	7.7	7.9	8.1	8.3	8.4	8.5	8.7
Tree nuts, whole and processed	7.5	8.1	8.1	8.5	8.8	9.1	9.4	9.9	10.6	10.9	11.2	11.6
Cotton	3.4	5.8	4.8	4.6	4.7	4.8	4.8	4.9	5.1	5.2	5.4	5.6
Sugar and tropical products	6.0	5.8	5.8	6.0	6.3	6.4	6.5	6.8	7.0	7.2	7.5	7.7
Other exports ¹	2.6	2.8	2.8	2.9	3.0	3.1	3.1	3.2	3.3	3.4	3.6	3.7
Total agricultural exports	129.6	140.5	140.0	143.8	148.1	153.0	157.0	161.4	165.8	170.0	174.9	179.8
Major bulk commodities ²	42.7	49.6	47.5	48.3	49.1	50.3	50.9	51.9	53.0	53.6	54.5	55.4
High-value product exports ³	86.9	90.8	92.5	95.5	99.0	102.8	106.1	109.5	112.8	116.4	120.4	124.4
High-value product share	67.1%	64.7%	66.1%	66.4%	66.8%	67.2%	67.6%	67.8%	68.0%	68.5%	68.8%	69.2%
<i>Million metric tons</i>												
Agricultural exports (volume):												
Bulk commodity exports	142.0	157.2	158.2	160.2	162.3	165.0	166.5	168.4	169.9	171.5	173.4	175.0
<i>Billion dollars</i>												
Agricultural imports (value):												
Livestock, dairy, and poultry	16.6	16.1	15.8	15.7	15.3	15.7	16.2	16.7	17.1	17.5	17.9	18.2
Livestock and meats	12.4	12.1	11.9	11.7	11.3	11.7	12.2	12.7	13.1	13.4	13.8	14.1
Dairy products	3.4	3.3	3.2	3.2	3.2	3.3	3.4	3.4	3.5	3.5	3.6	3.6
Grains and feeds	10.9	11.3	11.3	11.6	12.1	12.6	13.2	13.8	14.4	15.0	15.6	16.3
Grain products	7.3	7.8	7.7	8.2	8.6	9.0	9.4	9.8	10.1	10.6	10.9	11.3
Oilseeds and products	8.4	9.3	8.8	9.0	9.3	9.5	9.7	9.9	10.2	10.4	10.7	10.9
Vegetable oils	5.4	6.2	6.0	6.2	6.4	6.5	6.7	6.9	7.1	7.3	7.5	7.7
Horticultural products	53.1	56.8	55.9	58.7	61.9	64.9	67.9	70.9	73.8	76.7	79.8	82.7
Fruits and vegetables, fresh	19.2	20.4	20.1	21.5	22.9	24.2	25.6	26.9	28.1	29.4	30.8	32.1
Fruits and vegetables, processed	9.8	10.2	10.5	10.7	11.1	11.4	11.8	12.1	12.5	12.8	13.1	13.5
Sugar and tropical products	22.2	23.9	23.3	24.3	25.1	26.4	27.2	28.1	29.3	30.4	31.7	33.0
Sugar and related products	4.6	4.7	4.7	5.0	5.2	5.7	5.8	5.9	6.4	6.6	7.0	7.5
Cocoa, coffee, and products	10.8	11.8	11.6	11.6	12.1	12.2	12.3	12.5	12.5	12.8	12.9	13.0
Other imports ⁴	1.8	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.3
Total agricultural imports	113.0	119.1	117.0	121.2	125.6	131.1	136.3	141.5	147.0	152.2	157.9	163.5
Net agricultural trade balance	16.6	21.3	23.0	22.6	22.5	22.0	20.7	19.9	18.8	17.8	17.0	16.3

Sources: U.S. Department of Agriculture and U.S. Department of Commerce, Census Bureau.

U.S. trade value projections were completed in January 2018. For updates of the nearby year forecasts, see USDA's *Outlook for U.S. Agricultural Trade* report, published in February, May, August, and November.

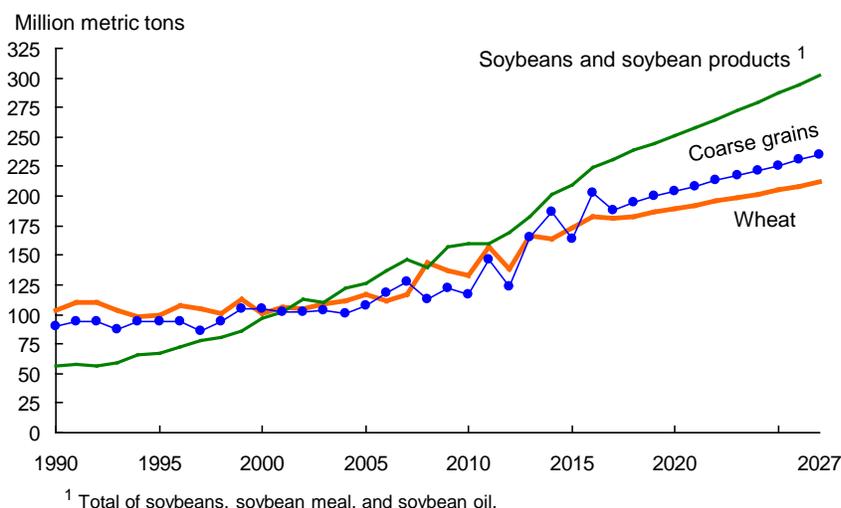
¹Includes planting seeds, unmanufactured tobacco, and cotton linters.

²Includes bulk grains, soybeans, cotton, and tobacco.

³The category "high-value product exports" is calculated as total exports less bulk commodities. The category includes semiprocessed and processed grains and oilseeds, animals and animal products, horticultural products, and sugar and tropical products.

⁴Includes planting seeds, unmanufactured tobacco, and cotton.

Global trade: Wheat, coarse grains, and soybeans and soybean products

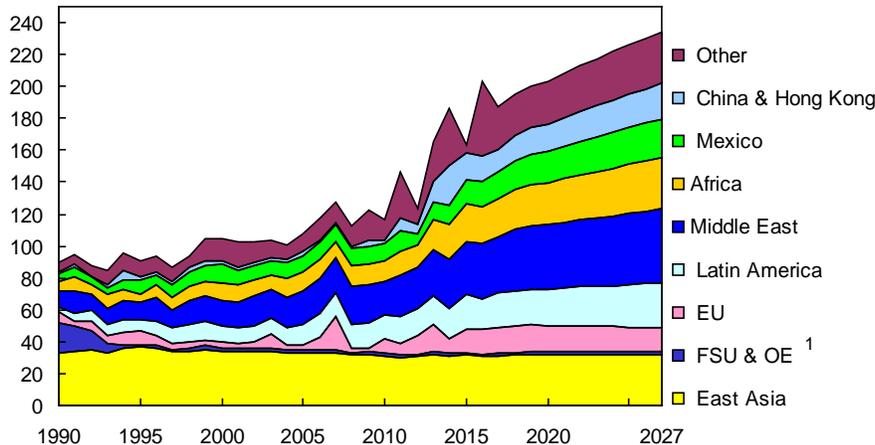


Global trade in soybeans and soybean products has risen rapidly since the early 1990s and surpassed global trade in wheat and in total coarse grains (corn, barley, sorghum, rye, oats, millet, and mixed grains). Continued strong growth in global demand for vegetable oil and protein meal—particularly in China, the EU, and other Asian countries—is expected to maintain soybean and soybean-products trade well above both wheat and coarse grain trade throughout the next decade.

- Population growth and urbanization are significant factors driving overall growth in demand for agricultural products, even though population growth is slowing. Global income growth outpaces population growth, further boosting and changing agricultural demand. World consumption of oilseeds is projected to rise 25.5 percent over the next decade, compared with 15.3 percent for meat, 11.7 percent for coarse grains, 10.6 percent for wheat, and 7.5 percent for rice. On a per capita basis, world food use of rice and wheat decreases slightly over the projection period as consumers in developing countries, with rising incomes, favor increasing meat consumption.
- Increasing demand for grains, oilseeds, and other crops provides incentives to expand global area under cultivation and intensify crop production, even though recent lower prices constrain expansion. Globally, the total area planted to grains, oilseeds, and cotton is projected to expand by about 5% from 2018 to 2027. Well over half of the projected growth in global production of grains, oilseeds, and cotton (1.3 percent per year to 2027/28) is obtained from rising yields. World consumption increases by 13.4 percent over the projection period.
- Area expands more rapidly in countries with a reserve of arable land, lower production costs, and policies that allow farmers to respond to prices. The largest projected increases in planted area are in the regions of South America, Sub-Saharan Africa, and Southeast Asia. Large expansions are projected for Brazil and Argentina, including uncultivated land brought into soybean production in response to increased world demand for protein meal and vegetable oils. In Southeast Asia, Indonesia accounts for the greatest increase in new area as palm oil area is projected to increase. In most other countries the area expansion is slower or in some countries the area cultivated is contracting.

Global coarse grain imports

Million metric tons



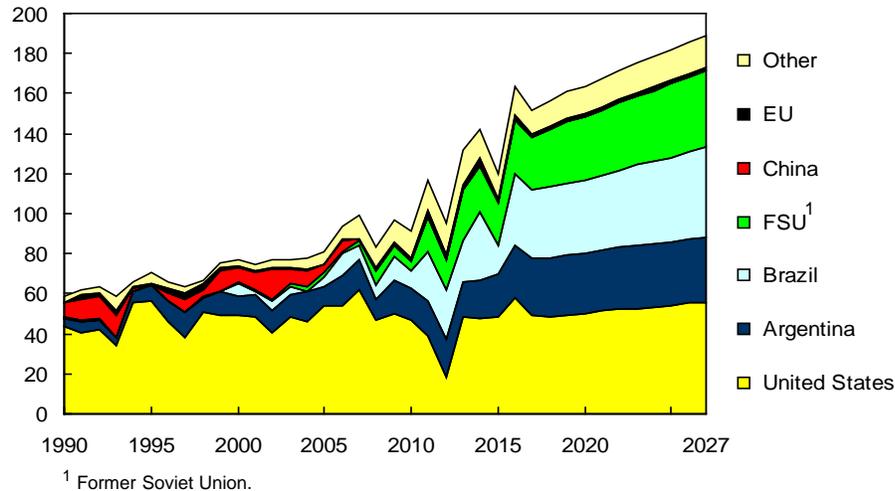
¹ Former Soviet Union and Other Europe; prior to 1999, includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

World coarse grain trade is projected to increase by 39.2 million tons (20 percent) between 2018/19 and 2027/28. Expansion of livestock production in feed-deficit countries continues to be the main driver of growth in coarse grain imports. Key growth markets are Africa, the Middle East, Latin America (less Argentina and Brazil), and Southeast Asia. Corn trade is expected to be 80.4 percent of the world coarse grain trade through 2027/28; with barley's share expected to decrease slightly to 13.5 percent. By 2027/28 the largest coarse grain importers are Mexico, China, Saudi Arabia, Japan, Iran, EU, Egypt, and Vietnam.

- China's coarse grain imports are projected to increase by 6 million tons by 2027/28, due to increased imports of corn, sorghum and barley. Corn imports are projected to be 3.5 million tons in 2018/19 and are expected to rise to 7.5 million tons by 2027/28, as China's feed demand grows while recently adopted initiatives curb corn production in erodible and drought-prone regions. Imports of relatively lower-priced sorghum and barley also increase over the projection period.
- Together, Africa and the Middle East account for about 40 percent of the growth in world coarse grain imports through 2027/28, as rising incomes and populations foster strong demand growth for livestock products and limited arable land and water constrain domestic grain production. By 2027/28, these combined regions will import 34 percent of world coarse grains imports. Saudi Arabia, Iran, and Egypt are projected to account for 20 percent of world coarse grain imports by 2027/28.
- Imports by Mexico account for 15 percent of the increase in global coarse grain trade during the coming decade. This reflects increased meat consumption and production. Mexico's sorghum imports decreased in 2013/14 and 2014/15 as high demand by China raised sorghum prices relative to corn. Mexico's imports are projected to remain low reaching 0.5 million tons by 2027/28. Mexico's corn imports increased the past five years to 16.5 million tons in 2017/18 and are projected to rise from 17.7 million tons in 2018/19 to 23.5 million tons by 2027/28.
- South and Southeast Asian and Oceania coarse grain imports rise 40 percent to 24.3 million tons by 2027/28 in response to increased demand from livestock producers. These three regions account for 19.5 percent of the growth in world corn imports. Vietnam and Malaysia are among the fastest growing corn importing countries in this region. Recently, Indonesia implemented policies to limit imports for corn and feed wheat to support domestic corn production.

Global corn exports

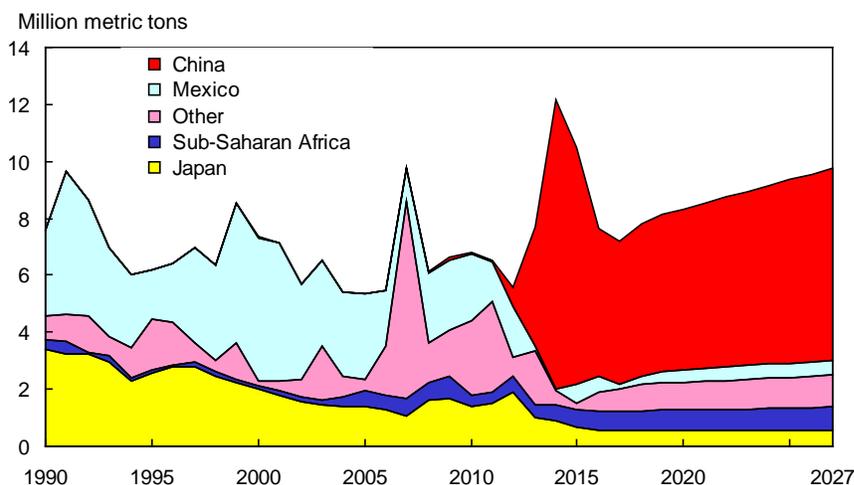
Million metric tons



U.S. corn exports are expected to increase by 7.6 million tons over the projection period and reach 55.9 million tons in 2027/28. Strong export competition leads to a reduction of the U.S. share of world corn exports (from 30.8 to 29.6 percent) over the projection period; the past 7-year average is 33.1 percent, well below the 59-percent share for the 2001/02 to 2010/11 period.

- Annual corn exports by the countries of the FSU, mostly Ukraine, are expected to rise by 9.2 million tons (32 percent), reaching 38.1 million tons in 2027/28. The region's favorable resource endowments, increasing economic openness, wider use of hybrid seed, and greater investment in the agriculture sector all stimulate corn production. Although feed use of corn in the FSU countries rises in the projections, this region becomes the world's third-largest corn exporter, after the United States and Brazil. By itself, Ukraine is the fourth largest exporter after Argentina.
- Argentina is the third-largest corn exporter. Argentine corn production is projected to increase dramatically, reflecting a large reform-induced increase in area in 2016/17 and continued yield growth throughout the projection period. Corn area expansion is motivated by the termination of export controls (mainly taxes). Exports increase from 29.4 million tons in 2018/19 to 32.5 million tons by 2027/28, an increase of 11 percent over the projection period.
- Brazil's annual corn exports have more than tripled over the past decade and averaged 27.9 million tons in the past 5 years. Production of second-crop corn following soybeans, much of which takes place in the Center West, continues with expansion onto new cropland. This growing region is better positioned for exports than for domestic use as poultry production is concentrated in the south of the country. Also, the second crop is harvested when the port capacity is less constrained by soybean shipments. For the reasons above, production of the second-corn crop tends to be exported. The export increase reflects greater corn area and yields, improved export infrastructure, and moderately increasing world prices. Exports rise by 25.7 percent from 35.6 million tons in 2018/19 to 44.8 million tons by 2027/28.
- EU exports grow marginally and reach 1.6 million tons by the end of the projection period. EU corn imports are projected to decline by 2.3 million tons to 14.2 million tons by 2027/28. Corn exports from the Other Europe region, mostly from Serbia to the EU, increase by 43 percent over the projection period and reach 2.9 million tons by 2027/28.
- South Africa exports increase by 43 percent to 2.3 million tons by 2027/28. Other Africa corn exports are flat at 1.3 million tons throughout the projection period to 2027/28.

Global sorghum imports

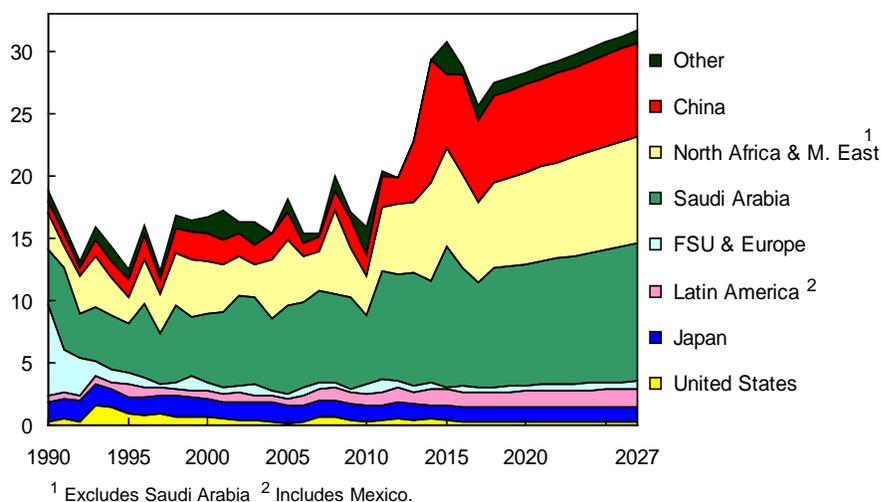


World sorghum trade trends upward from around 7.8 million tons in 2018/19 to 9.7 million tons by 2027/28. World sorghum trade is expected to increase by 25 percent during the coming decade as China's recent surge in imports continues. U.S. sorghum exports to China spiked in recent years as feed mills in southern China sought cheaper substitutes for expensive domestic corn. China's sorghum imports are expected to increase in coming years due to increasing feed demand and low prices relative to domestic corn. Most countries maintain stable imports through 2027/28. Mexico and Japan account for 11 percent of global imports over the projection period.

- U.S. sorghum exports surged in 2013/14 through 2015/16 due to China's emergence as the leading importer, but exports are projected to decrease in 2018/19 to 5.8 million tons as China's demand falls. Projected U.S. exports increase from 5.8 million tons in 2018/19 to 7.1 million tons by 2027/28. The U.S. sorghum export trade share is projected to be stable near 74 percent.
- China's sorghum imports jumped significantly in the past 3 years, and are projected to increase from 5 million tons in 2017/18 to 5.3 million tons in 2018/19 and increase further to 6.8 million tons by 2027/28. Feed mills in south China can substitute sorghum and barley for relatively expensive Chinese corn. Sorghum can be imported at low tariffs without the need to acquire quotas or worry about biotech approvals that hamper imports of corn. Constraints on corn imports will maintain China's strong demand for imported sorghum.
- Mexico's sorghum imports increase over the projection period after decreasing significantly over the past couple of years when alternative feed grains, especially corn, were more affordable. China's surging demand pushed sorghum prices up relative to corn prices, inducing Mexico's importers to shift from sorghum to corn. However, Mexico is not expected to increase imports significantly over the projection period because China continues to expand sorghum imports, pushing prices up. Mexico's sorghum imports are projected to rise modestly from 0.3 million tons in 2018/19 and reach 0.5 million tons by 2027/28.
- Japan is the world's third-largest sorghum importer and is projected to continue to be stable, importing 500,000 to 600,000 tons annually over the next decade.
- The U.S. is the world's largest sorghum exporter. Australia is the world's second largest sorghum exporter through the projection period. Australia's sorghum exports, mainly to China, are projected to increase slightly from 0.9 million tons in 2018/19 to 1.3 million tons by 2027/28.
- Argentina is expected to be the world's third-largest sorghum exporter during the coming decade. Argentina's exports are projected to increase from 570,000 to 800,000 tons per year. The primary markets for Argentine sorghum exports are Japan, Chile, Saudi Arabia, and Colombia.

Global barley imports

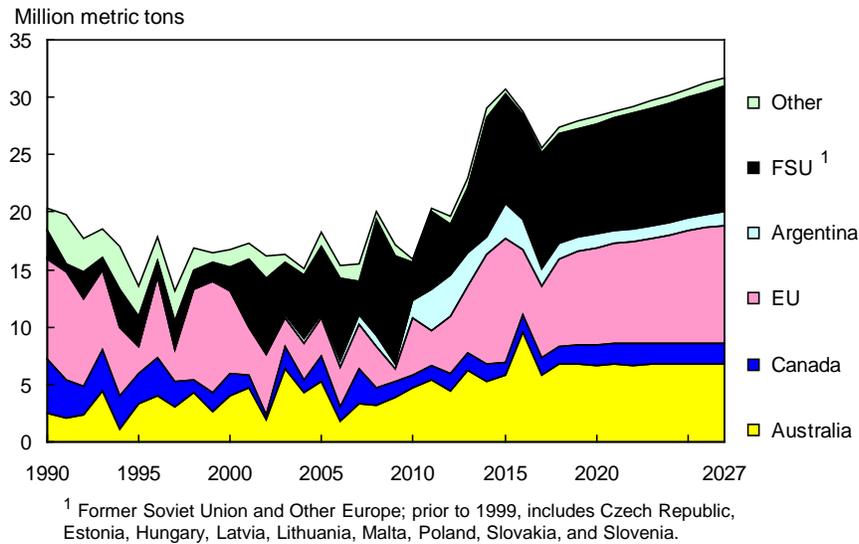
Million metric tons



Global barley trade is projected to expand from 27.5 million tons to 31.6 million tons by 2027/28. Demand for feed barley increased sharply in 2013/14 and especially 2014/15, due to China's strong demand. China's demand for barley as feed gradually increases throughout the projection period. Feed barley imports by the Middle East, North Africa, and Latin America are expected to rise over the next decade. Total barley imports increase by 18 percent for North Africa, 22.6 percent for Latin America, and 19.5 percent for the Middle East by 2027/28.

- Saudi Arabia remains the world's leading importer of barley—imports increase from 9.6 million tons in 2018/19 to 11 million tons by 2027/28. Despite the increase, Saudi Arabia's share of world barley imports is stable near 35 percent. Saudi Arabia uses imported barley primarily as feed for sheep, goats, and camels. Iran increases barley imports by 29.6 percent by 2027/28 to 1.7 million tons. Other countries in the Middle East are projected to increase barley imports from 2.1 million tons in 2018/19 to 2.9 million tons by 2027/28. Jordan and Israel are the third and fourth largest importers. Both Turkey and Morocco have stable imports over the projection period at 0.5 million tons and 0.2 million tons respectively. North Africa's largest importers are Libya, Algeria, Tunisia and Morocco, in 2016/17.
- China's demand for feed barley surged beginning in 2013/14 as domestic corn prices were supported well above levels for world feed grains. As barley prices are projected to remain lower relative to corn prices, China is expected to maintain strong demand for feed barley imports. China's barley imports are projected to increase from 6.9 million tons in 2018/19 to 7.4 million tons by 2027/28.
- World demand for malting barley is boosted by strong growth in beer demand in some developing countries, most notably China. China's domestic production of malting barley grows relatively little, so rising brewery demand is met by imports. China remains the world's largest importer of malting barley, with Australia and Canada the main suppliers.

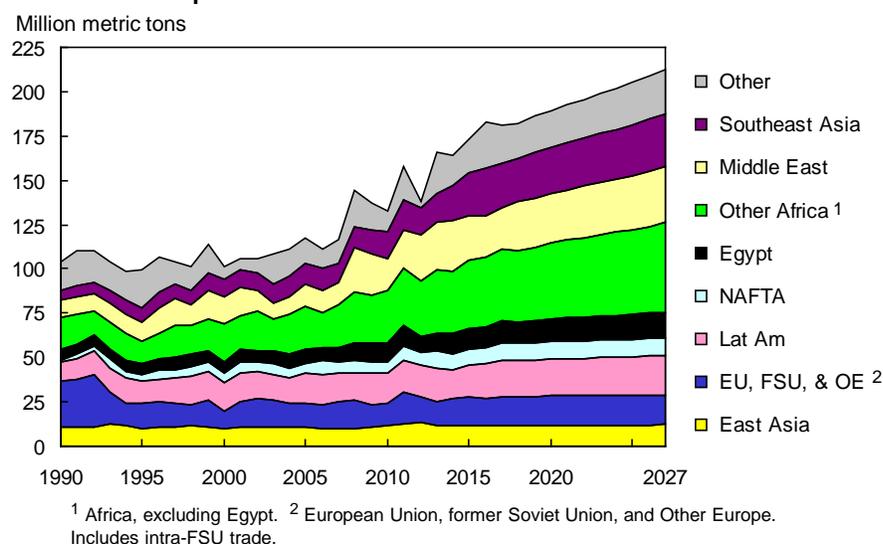
Global barley exports



The EU and Australia are the largest barley exporters during the projection period, followed by Russia, Ukraine, and Argentina. Argentina, Ukraine, and Australia barley exports decrease slightly. Australia's world export share decreases from 25 to 22 percent. By 2027/28, the world export share increases from 28 to 33 percent for the EU and from 16 to 18 percent for Russia.

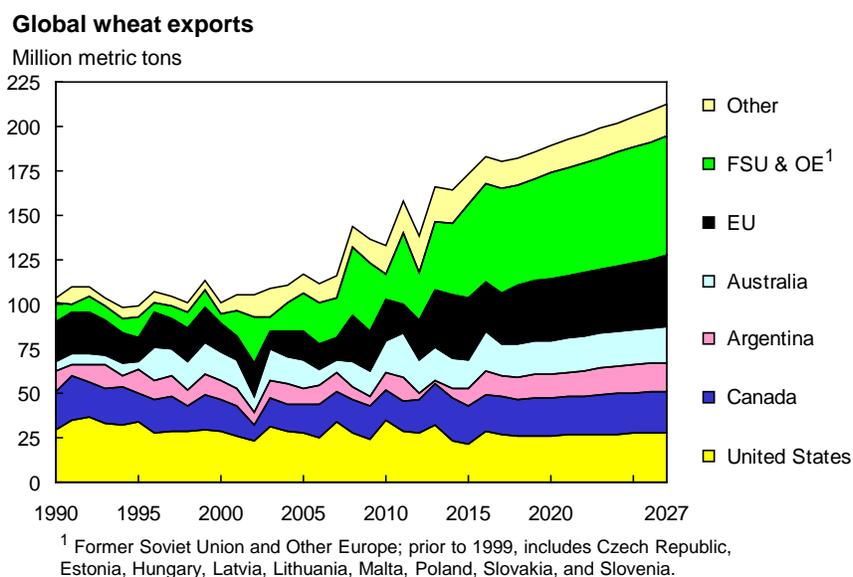
- The EU's barley exports for 2018/19 are projected at 7.6 million tons and are expected to increase to 10.3 million tons by 2027/28, in part due to increased barley demand from the Middle East and the EU's logistical comparative advantage for this region.
- Australia's barley exports are expected to remain flat during the coming decade near 6.8 million tons. The EU surpassed Australia as the world's largest barley exporter in 2017/18.
- Argentina's barley exports are projected to decrease from 1.5 to 1.2 million tons throughout the projection period. Barley area expansion came to a halt after the Government eliminated wheat export taxes. Wheat is expanding into areas where other winter crops are planted, often double-cropped with soybeans. The main purchasers of Argentina's feed barley are Saudi Arabia, United Arab Emirates, other Middle East countries, and North African countries. Most of Argentina's malting barley exports are to Brazil and neighboring countries.
- Barley exports by the FSU countries are projected to increase from 9.6 million tons in 2018/19 to 10.9 million tons during the coming decade. An increase in Russian barley exports more than offsets a small reduction in Ukraine's exports. Russia is projected at 5.8 million tons and Ukraine's at 4.1 million tons by the end of the projection period. Kazakhstan is also expected to increase its exports, especially to Iran.
- The substantial price premium for malting barley will continue to influence planting decisions in Canada and Australia, where malting barley's share of total barley area is expected to rise over the next decade. However, Canada's total barley area continues to decline, as canola production increases in response to growing demand and higher profitability.

Global wheat imports



World wheat trade (including flour) is projected to expand by nearly 29.7 million tons (16 percent) between 2018/19 and 2027/28, reaching 212.1 million tons. Growth in wheat imports is concentrated in developing countries where income, urbanization and population gains drive increases in demand. The largest growth markets include Egypt, Iraqi, Indonesia, Bangladesh, Sub-Saharan Africa, the Middle East, and South East Asia.

- Almost no change in per capita wheat consumption is expected in many developing countries, but imports are projected to expand modestly due to population growth, limitations to expansion of domestic wheat production, and increasing wheat feed demand. As incomes rise in Indonesia, Vietnam, and other Asian countries, demand for instant noodles and bakery products increase.
- Egypt and Indonesia remain the world's leading wheat importers, with annual imports climbing to 14.7 million tons and 12.6 million tons, respectively, by 2027/28. Indonesian imports are growing rapidly due to population growth, increased consumption of non-traditional instant noodles, and feed demand. Bangladesh and Brazil are the third and fourth largest wheat importing countries in our projections, increasing to 8.8 million and 7.6 million tons by 2027/28, respectively. These four countries add 7 million tons to imports over the projection period, accounting for 23 percent of the increase in global imports. The Philippines, Thailand, Vietnam and Malaysia collectively add 3 million tons to imports by 2027/28, which is driven by rising incomes and populations, greater diversified consumption and wheat feed demand.
- Countries in Africa (including Egypt) and the Middle East increase their wheat imports by 12.5 million and 4.4 million tons, respectively, by 2027/28, accounting for 57 percent of the total increase in world wheat trade. As Saudi Arabia has nearly completed a planned phase-out of domestic wheat production due to water scarcity, its annual imports are projected to increase to 4.7 million tons by 2027/28.
- China has a surplus of wheat, but import demand remains strong due to a deficit of wheat suitable for use in bakery and specialty products. China's wheat imports increase to 4.5 million tons by 2027/28. Imports by Japan decrease slightly whereas imports by South Korea and Taiwan increases slightly, totaling about 12.1 million tons per year. Historically, India has cycled between being a wheat importer in some years and an exporter in other years. India is a marginal net wheat importer over the projection period, exporting an annual 45,000 tons while importing about 100,000 tons.

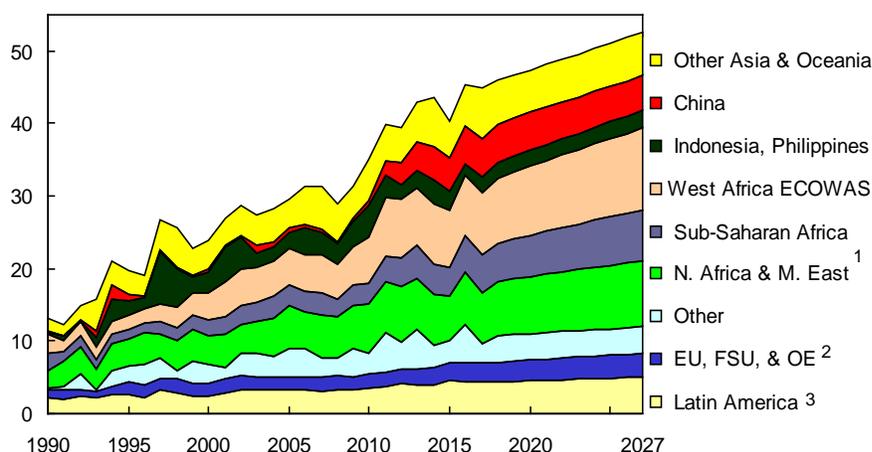


The five largest wheat exporters (the EU, Russia, United States, Canada, and Australia) are projected to account for 68 percent of world trade in 2027/28. The FSU region exhibits the fastest growth in world export share, rising from 12 percent in the late 1990s and early 2000s to 23 percent over the past decade and then to a projected 31 percent by 2027/28.

- The EU's export market share is projected to increase slightly from 18 to 18.7 percent over the projection period. EU wheat exports are projected to reach 39.7 million tons by 2027/28 (2.1 percent annual growth rate), supported by higher yields and a decline in wheat fed to livestock domestically due to relatively low feed grain prices. Turkey expands exports from 5.7 million tons in 2018/19 to 7.0 million tons by 2027/28.
- Wheat exports from Russia, Ukraine, and Kazakhstan have been strong during the past five years and are projected to climb from 55 million tons in 2018/19 to 66 million tons by 2027/28, accounting for 37 percent of the projected increase in world wheat exports. Although not explicitly reflected in the projections, year-to-year volatility in FSU wheat production and trade is likely because of the impact of the region's highly variable weather.
- U.S. wheat exports are projected to gradually rise from 25.9 million tons to 27.5 million tons during the coming decade. The U.S. share of world exports gradually decreases from 14.2 percent in 2018/19 to 13 percent by the end of the projection period in 2027/28.
- Canada's wheat exports grow from 20.9 million tons in 2018/19 to 23.5 million tons in 2027/28. Declining feed use and slow growth in domestic food demand supports higher wheat exports. Canada's wheat production increases due to yield growth, as area falls slightly. Australia's projected wheat exports increase by 7.9 percent from 18.8 million tons in 2018/19 to 20.3 million tons by 2027/28. Australia is a major exporter to Southeast Asia and the Middle East, both of which exhibit strong growth in wheat demand and imports.
- Argentina's wheat area grows substantially as the new government policies have abolished export taxes that were limiting returns to wheat production. Wheat area is projected to expand, especially in areas where it can be double-cropped with soybeans. Recent exports have rebounded from the low levels of 2012/13 and 2013/14 and are expected to continue to rise throughout the projection period, from 12.5 million tons in 2018/19 to 16.4 million tons in 2027/28, surpassing the recent record of 13.3 million tons in 2016/17.

Global rice imports

Million metric tons



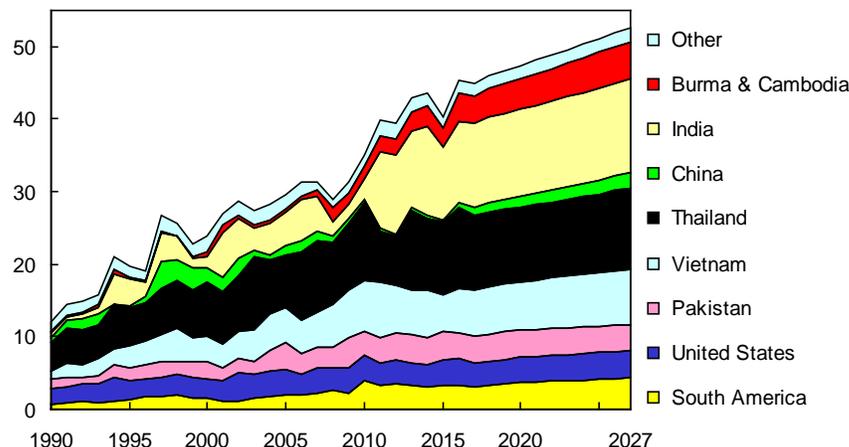
¹ Exclude 15 member countries in Economic Community of West African States, ECOWAS. ² European Union, former Soviet Union, and Other Europe. ³ Includes Mexico.

Global rice trade is projected to grow at an annual rate of 1.5 percent from 2018/19 to 2027/28, reaching 52.6 million tons by the end of the projection period. This is an increase of 14.4 percent over the projection period. The main factors driving this expansion in trade are steady growth in demand—largely due to population and income growth in developing countries, mostly in Sub-Saharan Africa—and the inability of several key importing countries in Sub-Saharan Africa to raise production significantly. Since the early 1990’s world rice trade as a share of world consumption has risen from less than 4 percent to 9.4 percent by 2017/18. This upward trend is expected to continue, with the trade share of global consumption projected to slightly exceed 10.1 percent by 2027/28.

- China remains the largest rice-importing country throughout the projection period. Over the coming decade, China’s imports are projected to trend slowly downward from a record 5.32 million tons in 2018/19, but remain historically large at 4.85 million tons by 2027/28.
- In Sub-Saharan Africa and the Middle East, strong demand growth is driven by rapidly expanding income, population, and urbanization. Plus, rice is easier to prepare than most traditional food staples. In North Africa and the Middle East, production is primarily limited by climate. In Sub-Saharan Africa, production growth—while rapidly expanding—is constrained by infrastructure deficiencies and resource limitations. Altogether, the Africa and Middle East regions account for 88 percent of the increase in world rice trade over the projections. Nigeria remains the world’s second-largest rice-importing country, with imports reaching 3.24 million tons by 2027/28.
- After China and Nigeria, the next largest importers are the EU, Saudi Arabia, the Philippines, Iran, and Iraq with imports ranging from 1.47 to 2.53 million tons a year by 2027/28. Historically, Indonesia and the Philippines were the largest rice importers. Despite increasing production, rising consumption causes the Philippine’s imports to increase to 1.71 million tons by 2027/28, up just 4.5 percent over the decade. Indonesia’s imports increase 1 percent annually reaching 640,000 tons by 2027/28, with a slow decrease in per capita consumption.
- Saudi Arabia imports 1.88 million tons by 2027/28, while South Africa and Malaysia import 1.12 and 1.02 million tons, respectively. Saudi Arabia—which does not grow rice—is expected to show strong consumption growth over the next decade. Bangladesh’s imports are stable averaging about 750,000 tons over the projection period. Japan, South Korea, and Taiwan maintain minimum market access import levels as agreed under the WTO Uruguay Round on Agriculture. Canada and the United States have modest annual import growth.

Global rice exports

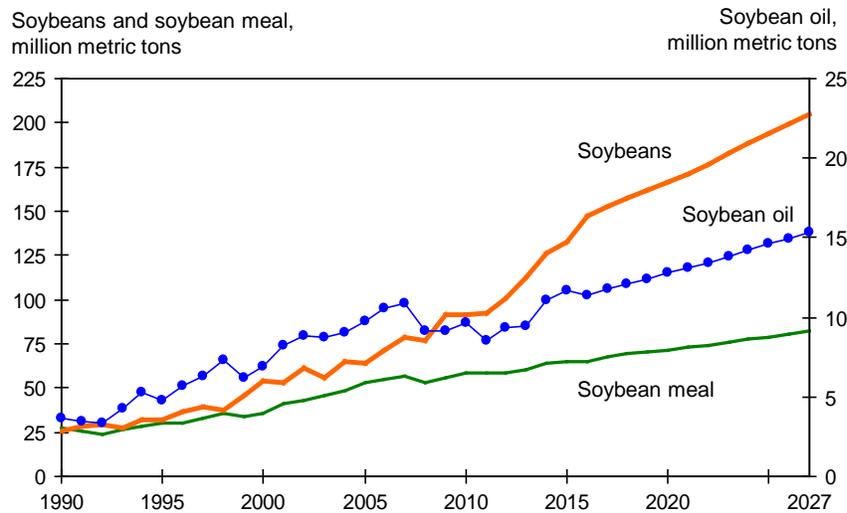
Million metric tons



Asia continues to supply most of the world's rice exports throughout the projection period. India, Thailand, and Vietnam remain the world's largest rice-exporting countries, accounting for 61 percent of world rice exports and about 46 percent of the growth in the coming decade.

- India's rice exports had historically been volatile due to government trade and consumer policies and world market conditions. However, in September 2011, the Indian Government eased a partial export ban on non-basmati rice and exports increased significantly, allowing India to become the leading global rice exporter for the past six years. India is projected to remain the largest exporter during the projection period, with exports increasing by 1 million tons and reaching 12.8 million tons by 2027/28.
- In Thailand, increasing production and stable stock levels enable exports to rise 0.9 million tons to 11.2 million by 2027/28. Vietnam's exports expand 1.1 million tons, rising from 6.5 million tons to almost 7.7 million tons over the projection period. In both Vietnam and Thailand, rice per capita food consumption declines slightly as rising incomes support shifts toward a more diversified diet with increasing meat consumption, especially poultry. Burma and Cambodia are projected to increase rice production over the next decade, with strong rice exports growth reaching 3.5 million and 1.8 million tons, respectively, by 2027/28.
- Pakistan has exported 3-4 million tons of rice in recent years. Pakistan's rising consumption and weak production growth result in slightly declining rice exports through the projection period, from 3.82 to 3.58 million tons, remaining the world's fourth-largest rice exporter.
- The United States is projected to be the world's fourth-largest rice exporter by 2027/28. Expansion of U.S. rice exports is projected at a modest 1 percent per year due to a slight increase in area, improving yields, and slow growth in domestic use. The U.S. share of world rice exports is projected to decline from 7.5 to about 7.1 percent during the next decade. The United States exports both long-grain and medium- and short-grain rice.
- Exports from South America—primarily Argentina, Brazil, Guyana, Paraguay, and Uruguay—are projected to expand over the next decade, accounting for almost 8.3 percent of global trade.
- Australia's rice area is expected to recover from recent drought-reduced levels, facilitating a slight expansion in rice exports each year over the projections. Exports reach a projected 480,000 tons by 2027/28, still below the 1998/99 record. Egypt's rice exports decline throughout the projection period from 190,000 to 140,000 tons, as area is limited by access to water, and consumption increases. Australia and Egypt export medium- and short-grain rice and are the primary U.S. export competitors for these rice classes.

Global exports: Soybeans, soybean meal, and soybean oil

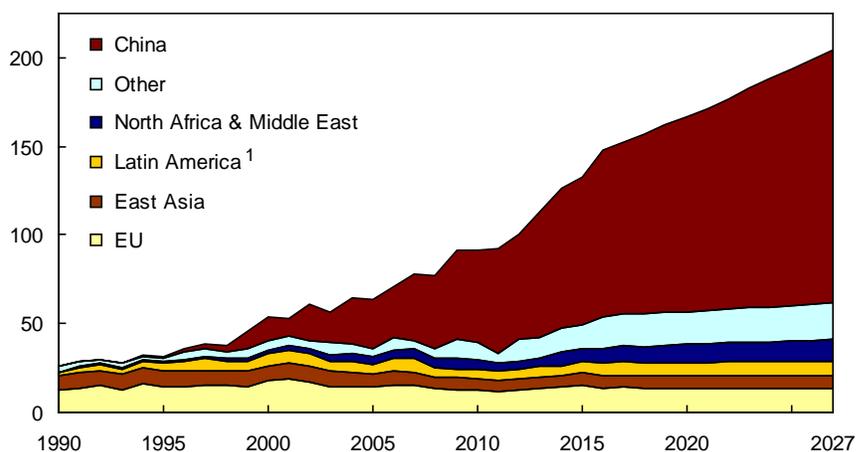


Increasing incomes and growing populations in developing countries, along with urbanization and development of modern food markets and outlets, are projected to boost demand for vegetable oils for food consumption and for protein meals used in livestock production. Global vegetable oil use for biodiesel production also is projected to increase, although at a slower pace than in recent years.

- China remains the predominant importer of soybeans, which are crushed domestically in order to meet robust domestic demand for both vegetable oil and oilseed meals for feed. China will also remain a significant importer of vegetable oils. The EU, India and China are the leading importers of palm oil from Indonesia and Malaysia. Indonesia will expand palm area for oil exports to meet demand for palm oil used in food and consumer products by those countries.
- Many countries with increasing feed demand and limited opportunities to expand oilseed production have invested in crushing capacity. China is the most prominent example, but countries in North Africa, the Middle East, and Southeast Asia are seeing similar developments. As a result, import demand for oilseeds has grown rapidly, and this growth is projected to continue. During the next decade, global soybean trade is projected to increase by 30 percent, soybean meal trade by 18 percent, and soybean oil trade by 27 percent.
- Argentina, Brazil, and the United States maintain about 87 percent of the world's aggregate exports of soybeans, soybean meal, and soybean oil throughout the projection period.
- Brazil's share of world exports of soybeans and soybean products climbs from 35 percent to 40 percent, as production expands faster than in any other soybean-exporting country. In Argentina, escalating production costs for grains and policy uncertainties are expected to cause farmers to keep more land in soybean production. Argentina's share of world exports of soybeans and soybean products (mostly products) is steady at 20 percent.
- The U.S. share of global exports of soybeans and soybean products is projected to decline from 31 to 27 percent by 2027/28.
- The EU is expected to continue expanding its biodiesel production but at a slower pace than in recent years as policy emphasizes increased use of nonfood feedstocks over edible oils. Production of rapeseed oil, the EU's primary biodiesel feedstock, increases along with rapeseed production. The EU's imports of soybeans change little, while projected imports of soybean meal and soybean oil slightly increase.

Global soybean imports

Million metric tons

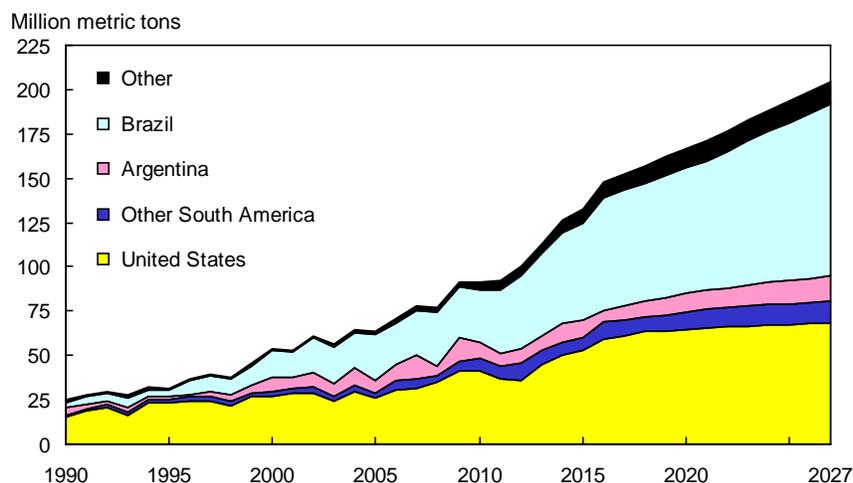


¹ Includes Mexico.

World soybean trade is projected to rise rapidly during the next 10 years, climbing 48 million tons (30 percent) to 205 million tons. China increases soybean imports by 41 million tons by 2027/28.

- China's soybean imports have risen steadily since the late 1990's. In 2017/18 China accounted for about 64 percent of world soybean trade. China's imports are projected to increase from 102 million tons in 2018/19 to 143 million tons in 2027/28, accounting for 86 percent of the increase in trade. The projections assume that China will continue to meet rising demand for edible vegetable oils and protein in feed by importing soybeans, while supporting domestic production of food and feed grains. China continues to add oilseed-crushing capacity that contributes to continued growth in soybean imports.
- EU soybean imports have been stable near 13 million tons over the past decade due to decreases in internal EU grain prices and increases in grain and rapeseed meal feeding. EU soybean imports are projected to be stable near 13.6 million tons over the projection period.
- Imports of soybeans by other countries in East Asia (Japan, South Korea, and Taiwan) are projected to be stable at 7.1 million tons, but a modest increase in livestock production generates an increase in soybean meal imports from 4 million tons to 4.5 million tons by 2027/28, mostly by South Korea.
- In Indonesia, soybeans are used for food consumption in the form of tempeh and tofu. Indonesia has no crushing industry for soybeans and imports all of the soybean meal that the country uses. Indonesian soybean imports increase by 25 percent to 3.4 million tons by 2027/28. Thailand increases soybean imports by 0.7 million tons by 2027/28 for increasing feed demand. Vietnam soybean imports increase by 29.5 percent reaching 2.7 million tons by 2027/28 due to expanding crushing capacity. Vietnam soybean meal imports also increase due to increasing feed demand.
- Many countries in North Africa and the Middle East region have minimal soybean production, so they increase imports to fill their growing feed and food needs from 9.5 million tons in 2018/19 to 12.2 million tons by 2027/28, a 28.5 percent increase. Egypt is projected to increase soybean and soybean meal imports in an effort to improve feed efficiency and expand poultry production.
- Mexico's soybean imports are projected to increase 19 percent to 5.2 million tons by 2027/28. These imports will support the production of soybean meal for the growing poultry and pork industries and soybean oil for domestic food consumption.

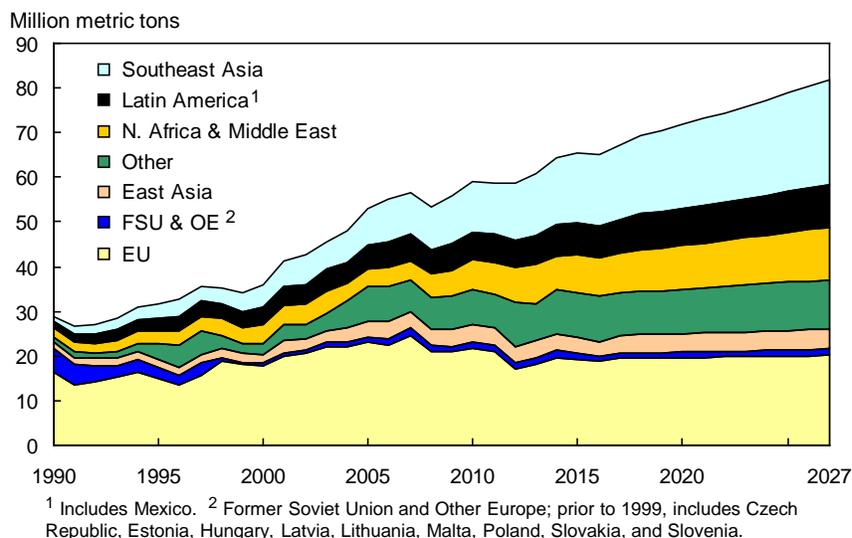
Global soybean exports



The three leading soybean exporters—Brazil, the United States, and Argentina—are projected to account for about 87 percent of world soybean trade over the next decade.

- Brazil’s soybean exports are projected to rise 30 million tons (45 percent) to 96.4 million tons during the projection period (2018/19 to 2027/28), enabling the country to strengthen its position as the world’s leading soybean exporter. Soybeans remain more profitable to produce than other crops in most areas of Brazil. With increasing plantings in the Cerrado region and production extending into the “Amazônia Legal” region, the growth rate in area planted to soybeans is projected to be in excess of 2.5 percent per year during the coming decade.
- The U.S. share of global soybean exports, are at about 40.3 percent in 2018/19 and projected to decrease to 33.4 percent by 2027/28. U.S. soybean exports are projected to increase slightly from 63.3 million tons in 2018/19 to 68.4 million tons by 2027/28.
- Argentina’s export tax rates are higher for soybeans than for soybean products, a policy that favors domestic crushing of soybeans and exporting the resulting products. In response to increasing world demand for soybeans for crushing, Argentina’s soybean exports are projected to grow 5.5 percent annually, rising about 62 percent to more than 14.1 million tons by 2027/28. Most of Argentina’s soybean exports go to China. Nonetheless, Argentina remains a distant third to Brazil and the United States as a soybean exporter as most of the country’s crop is processed domestically.
- Other South American countries, principally Uruguay, Paraguay, and Bolivia, also are projected to expand their area planted to soybeans. Exports by these countries increase 43 percent to 12.7 million tons by 2027/28, adding 3.8 million tons to world soybean exports.
- Canada increases soybean exports from 6.1 million tons in 2018/19 to 8.1 million tons in 2027/28. Canada’s soybean area has expanded beyond the traditional producing region of Southern Ontario to the prairies of Northeast Manitoba. Improved varieties of soybeans with better yields have contributed to this expansion in area. A depressed value of Ukraine’s exchange rate has strengthened domestic prices and incentivizes soybean production. Projected soybean exports increase from 2.6 million tons in 2018/19 to 3.6 million tons by 2027/28.

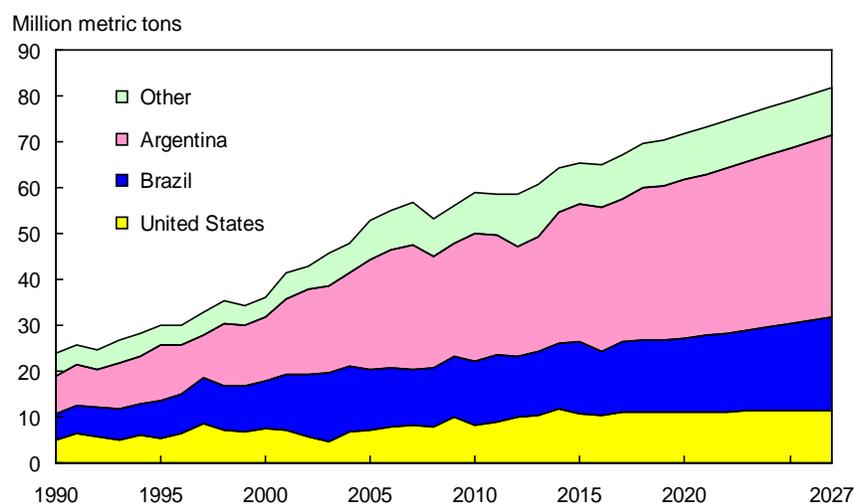
Global soybean meal imports



World soybean meal trade is projected to climb by 12.4 million tons (17.9 percent) to 81.9 million tons by 2027/28. In a number of countries, soybean meal imports are boosted by continued growth in livestock production and movement toward modern feed rations. Additionally, many countries have limited capability to increase domestic oilseed production.

- The EU remains the world's largest soybean meal importer throughout the projection period and remains stable near 20 million tons per year. Although abundant supplies of low-cost rapeseed meal are expected to be available as a result of EU biodiesel production, nutritional considerations limit the inclusion of rapeseed meal in some livestock rations.
- The regions of Southeast Asia, North Africa, the Middle East, and Latin America are projected to become larger importers of soybean meal due to increasing demand for livestock feed. Increasing poultry consumption and production is a major driving force, along with the lack of soybean crushing facilities. This fully describes the circumstances for Vietnam, which contributes the largest gain in world soybean meal imports (26 percent), with an increase from 5.7 million tons in 2018/19 to 9 million tons by 2027/28. Indonesia, the Philippines, Thailand, and Malaysia increase to 14.5 million tons by 2027/28, adding 2.6 million tons to imports. Southeast Asia accounts for 47 percent of the projected increase in world soybean meal trade.
- Annual imports by countries in North Africa and the Middle East are projected to rise by 3.3 million tons, accounting for 26 percent of the increase in world trade. Iran, Algeria, Egypt, and Saudi Arabia are the largest importers for these two combined regions. In 2018/19 these four countries accounted for about 46 percent of the regions imports.
- Annual soybean meal imports by South American countries increase by 15 percent over the projection period from 5.6 million tons in 2018/19 to 6.4 million tons by 2027/28. Peru, Colombia, Ecuador, Chile, and Venezuela are among the largest importers.
- Mexico's growing demand for protein feed is expected to boost its annual soybean meal imports from 2.4 million to 2.9 million tons by 2027/28. Canada's soybean meal imports are stable, increasing slightly to almost 800 thousand tons by 2027/28.

Global soybean meal exports

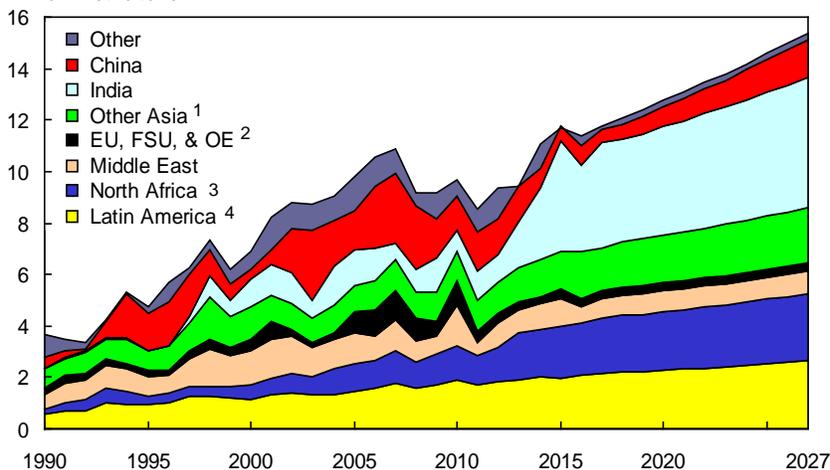


Argentina, Brazil, and the United States remain the world's three largest exporters of soybean meal. Together, their combined share of world exports rises slightly from 86 to 87 percent over the next decade. Argentina, Brazil, and United States account for 48, 25, and 14 percent, respectively, of the world market share of soybean meal exports by 2027/28. The U.S. share is decreasing slightly over the projection period.

- Argentina has lower export taxes on soybean products than on soybeans, a policy that encouraged the development of a large oilseed-crushing capacity. With Argentina's low costs of production for soybeans and its export incentives for soybean products, the country's soybean meal exports are projected to continue their strong growth at 2 percent per year. Argentina's annual soybean meal exports are projected to rise by almost 6.4 million tons over the next decade, reaching 39.5 million tons by 2027/28.
- In Brazil, the rapid expansion of poultry and pork production boosts domestic soybean meal consumption and limits increases in soybean meal exports. Nonetheless, exports of soybean meal increase by 4.9 million tons (32 percent) over the projected decade. Brazil's soybean-crushing capacity is expected to expand at a slower rate due to strong competition from Argentina in the international soybean meal market and a robust demand for its soybean supply from China. Brazil's share of world soybean meal exports increases from 22.2 percent to 24.8 percent by 2027/28.
- U.S. soybean meal exports are projected to increase slightly to 11.5 million tons by 2027/28. The U.S. share of world soybean meal exports declines from 16.2 percent in 2018/19 to 14 percent by 2027/28.
- India's soybean meal exports declined beginning in 2013/14 as expanding domestic use and smaller harvests reduced export opportunities. With expected returns to soybeans rising and increasing production the exports are seen rebounding to 1.7 million tons by 2018/19 and expanding to 2.2 million tons by 2027/28. Feed use for poultry, egg, and milk production continues to constrain soybean meal export growth.
- The EU continues to be a small but steady exporter of soybean meal to Russia and other Eastern European countries as livestock production is projected to grow significantly. Annual EU soybean meal exports hold steady at 300,000 tons through 2027/28.

Global soybean oil imports

Million metric tons



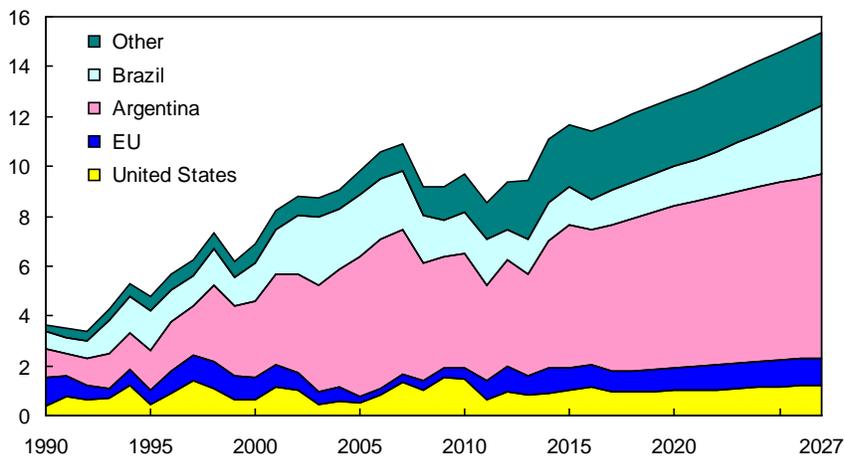
¹ Other Asia excluding India and China. ² European Union, former Soviet Union, and Other Europe. ³ Includes Egypt. ⁴ Includes Mexico.

World soybean oil imports are projected to climb by 3.3 million tons (27 percent) to 15.4 million tons over the projection period, bolstered by rising food and industrial use. Growth in world soybean oil trade is expected to continue to be constrained by competition with palm oil, the leading vegetable oil traded internationally.

- Although palm oil continues to account for the largest share of India's vegetable oil imports, India surpassed China in 2013/14 to become the world's largest soybean oil importing country. India's soybean oil imports climb 27 percent to 5.1 million tons in 2027/28. Factors contributing to the continued growth of India's soybean oil imports include burgeoning demand for vegetable oils and limited area for expanding oilseed production. Low yields, associated with variable rainfall and low input use, also inhibit growth of domestic oilseed production. Both Bangladesh and Pakistan increase imports over the projection period from a combined 1 million tons to 1.2 million tons.
- A rapid increase in China's soybean imports for crushing in recent years caused soybean oil imports to decline to about 586,000 tons in 2015/16. China's soybean oil imports are projected to rebound to 702,000 tons by 2019/20 and continue to rise to 1.5 million tons by 2027/28. Imports by the Southeast Asia region increase from 0.3 million tons to 0.4 million tons by 2027/28. By 2027/28, Vietnam and Malaysia account for most of the soybean oil imports within Southeast Asia, at 188,000 and 123,000 tons respectively.
- Income and population growth in North Africa, the Middle East, and Latin America contribute to gains in soybean oil demand and imports. The combined imports of Egypt and Iran are projected to be stable at 0.7 million tons over the projection period to 2027/28. The Other North Africa and South America regions each import 1.4 million tons in 2018/19 with each region increasing to 1.7 million tons by 2027/28. Algeria, Morocco, and Egypt are the largest soybean oil importers in North Africa. In South America the largest importers are Peru, Colombia, and Venezuela. The Central America and Caribbean region increases imports from 0.5 million tons to 0.6 million tons by 2027/28. Mexico's imports increase slightly to 0.4 million tons by 2027/28.

Global soybean oil exports

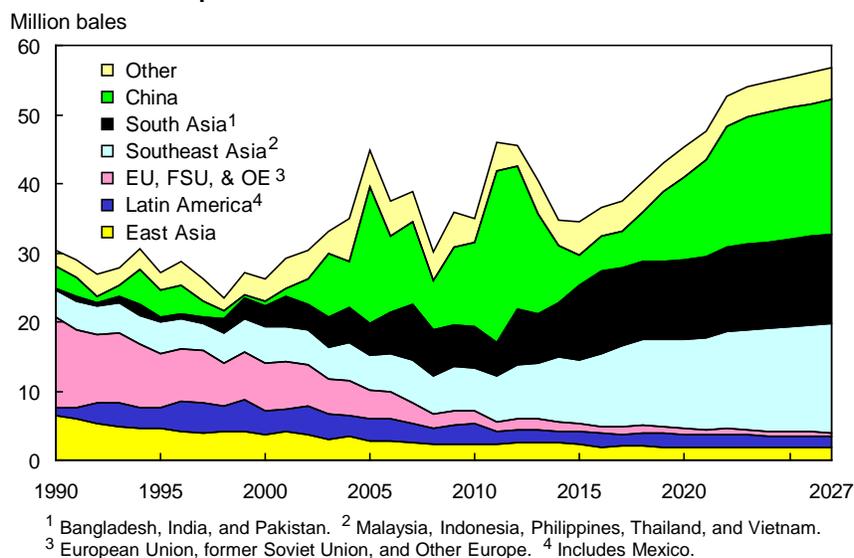
Million metric tons



Argentina, Brazil, United States, and the EU are the world's four leading soybean oil exporters. Their combined shipments are projected to account for 80 percent of world soybean oil exports during the coming decade. In 2027/28, Argentina, Brazil, and the United States are projected to account for 48, 18, and 8 percent of world soybean oil exports, respectively.

- Soybean oil exports from Argentina are projected to climb to 7.4 million tons by 2027/28, a 20 percent increase from 2018/19. Argentina's strength as a soybean oil exporter reflects the country's large crushing capacity, its small domestic market for soybean oil, and an export tax structure that favors exports of soybean products rather than soybeans. Gains in Argentine soybean production due to extensive double-cropping, further adjustments in crop-pasture rotations, and expansion onto marginal lands in the northwest part of the country facilitate increased soybean crushing. Although Argentina's soybean oil exports rise, this growth is slowed as more soybean oil is used to produce biodiesel.
- Brazil's soybean oil exports in 2018/19 are 1.5 million tons while continued expansion of soybean production into new areas of cultivation is expected to enable the country to increase soybean oil exports to 2.7 million tons by 2027/28. Over the coming decade Brazil is expected to use more soybean oil for biodiesel production.
- U.S. soybean oil exports rise steadily over the projection period and reach 1.2 million tons in 2027/28. The United States is expected to remain the world's third-largest soybean oil exporter, with 7.9 percent of global trade.
- The EU increases soybean oil exports from 0.9 million tons in 2018/19 to 1.1 million tons by 2027/28, accounting for 7.4 percent of global trade. The FSU region maintains stable soybean oil exports at 0.7 million tons over the projection period.
- Soybean oil exports by South American countries other than Argentina and Brazil are projected to remain stable, with exports of 1.2 million metric tons by 2027/28. Paraguay and Bolivia are the largest soybean oil exporters in South America after Argentina and Brazil.

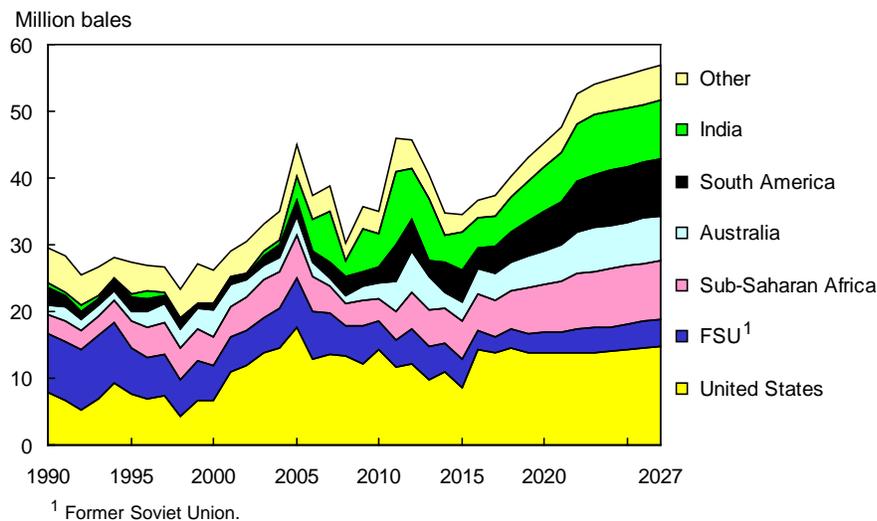
Global cotton imports



World cotton trade is projected to increase at a 3.9 percent annual growth rate between 2018/19 and 2027/28 as it recovers from a sharp decline during the period 2013/14 to 2017/18 that reflected reduced imports by China. World cotton trade rises over the projection period after China disposes of large reserve stocks and increases imports. Projected world cotton trade surpasses the 46.5-million-bale record set in 2012/13, reaching 57.4 million bales in 2027/28.

- China's cotton imports are expected to increase throughout the next decade with stronger growth in the first half of the projection period. After a sharp decline in recent years, China's cotton imports are expected to resume growth in 2018/19, with an average annual increase of 12 percent over the projection period. China increases imports by about 12.5 million bales with imports at 19.5 million bales in 2027/28. The growth in China's cotton imports reflects completion of a years-long disposal of stockpiles accumulated under a cotton price-support program that operated until 2013. Imports are set to rebound as excess government stocks are depleted. China's cotton use is expected to grow, but shifts in textile production to Bangladesh, Vietnam, India, and Pakistan will restrain China's growth.
- Vietnam is projected to be the second-largest importer in 2022/23 as its textile industry grows rapidly. Vietnam's cotton imports increased more than five-fold over the past decade and are projected to account for 22 percent of the world's increased imports to 2027/28. Vietnam's textile sector and cotton imports are expected to grow 4.7 percent annually through 2027/28.
- Bangladesh, Turkey, Indonesia and Pakistan are expected to be the third-, fourth-, fifth- and sixth-largest cotton importers by 2027/28. Bangladesh became the world's largest cotton importer in 2015/16, but is projected to be surpassed by China in 2019/20 and then by Vietnam in 2022/23. Turkey's share of world consumption has weakened recently, but imports are expected to increase slightly through the projection period to 3.9 million bales by 2027/28.
- Indonesia's cotton imports increase but do not surpass Turkey's. Indonesia remains the fifth largest cotton importer throughout the projection period, with imports projected to be steady at 3.5 million bales by 2027/28. Pakistan's cotton imports are projected to slightly decrease by 2027/28. Pakistan's new *Bacillus thuringiensis* (*Bt*) cotton varieties specific to its cotton-growing conditions stimulate additional production. Mexico, Thailand, Japan, South Korea, Taiwan, the EU and FSU all decrease imports slightly throughout the projection period, with a combined decrease of 1.35 million bales by 2027/28.

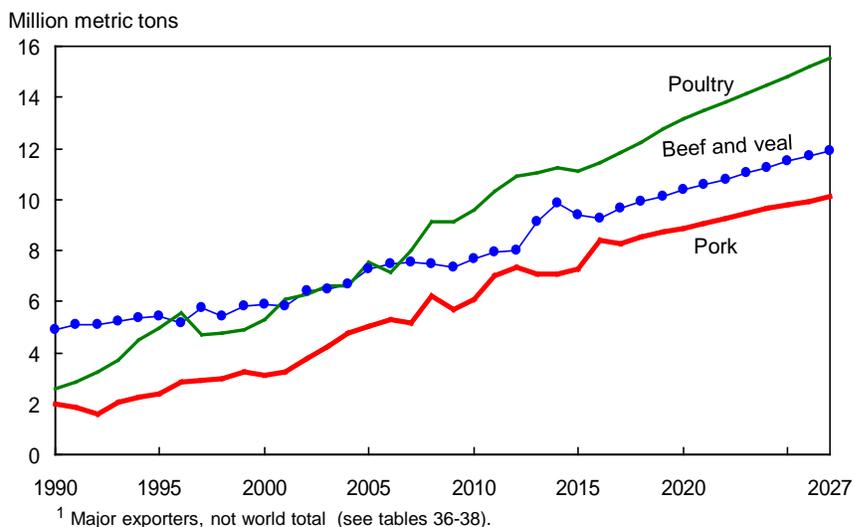
Global cotton exports



Raw cotton production is expected to continue moving to countries with favorable resource endowments and advancing production technologies. Expanded cotton output is projected for traditional producers with large amounts of land suitable for cotton production, including Brazil, Sub-Saharan Africa, and India.

- The U.S. share of world cotton production has fallen sharply with the spread of new technology around the world—the U.S. share is expected to continue falling. Nonetheless, even with production lower than historical levels, the United States remains the world’s leading cotton exporter, increasing marginally (0.2 percent annually) to 15.5 million bales by 2027/28. However, the U.S. share of world cotton trade falls to 27 percent by 2027/28, compared with 40 percent in 2016/17.
- India’s cotton exports grow by 5.9 percent annually, reaching 8.7 million bales in 2027/28. Improved yields in India, in part due to the adoption of *Bt* cotton, have raised India’s production and exports. Projected yield growth in India reflects continuing improvement in cultivation practices. With a 4.3 million-bale increase in its output by 2027/28, India is expected to remain the world’s second-largest cotton exporter behind the United States.
- Area planted to cotton in Brazil is projected to expand with continuing yield growth. Brazil’s cotton exports are projected to increase by 3.7 million bales by 2027/28, corresponding to a 7.2-percent annual growth rate, the largest projected growth rate among the world’s exporters. Brazil remains the world’s third-ranking cotton exporter throughout the projection period.
- Exports from the 15 countries of the Economic Community of West African States are projected to experience sustained growth in the next decade. Improvements in technical and financial infrastructure will help boost production and exports. Exports from the other countries in Sub-Saharan Africa also are projected to increase. In total, Sub-Saharan Africa is expected to add 3.1 million bales to trade and account for 16 percent of world trade over the projection period.
- Government policies in the major cotton-producing countries in the Central Asian FSU countries are promoting investment in textile industries and contributing to exports of textile products rather than exports of raw cotton. Lower grain prices will provide incentives to shift some land back to cotton in these countries, leading to a gradual increase in their cotton exports. Exports grow by 4.2 percent annually to 4 million bales by 2027/28, which is far below the peak exports of 7.3 million bales in 2005/06.

Global Meat exports ¹

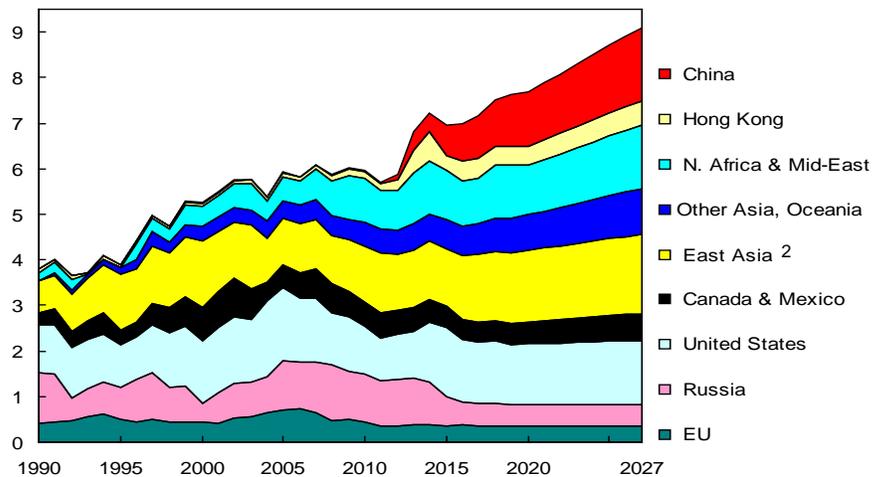


Growth in global meat consumption is projected to continue over the coming decade, leading many countries to increase meat exports. Poultry consumption rises the fastest, with a projected annual growth rate of 2.0 percent, followed by pork (1.2 percent) and beef (1.0 percent). Meat shipments by the major exporting countries rise by 2.3 percent per year, an increase of 6.6 million tons by 2027. Over the projection period, poultry exports rise by 3.2 million tons (2.9 percent annually), beef exports rise by 1.9 million tons (2.1 percent annually), and pork exports rise by 1.5 million tons (1.9 percent annually).

- Brazil is the largest exporter of poultry products followed by the United States, the EU, and Thailand. Brazil exports increase by 46 percent, reaching 6.4 million tons by 2027. Brazil accounts for a little over 60 percent of the global increase in poultry exports. The United States increases exports by 16 percent over the projection period to a little over 4 million tons by 2027. The third-largest exporter, EU, remains relatively stable near 1.4 million tons from 2018 through 2027. Thailand's projected poultry exports increase by almost 50 percent and reach almost 1.2 million tons by 2027.
- Brazil and India currently vie for the world's largest annual beef exporter, following a decade and a half of rapid export growth. Brazil is projected to export 1.83 million tons of beef in 2018 and increase by 974,000 tons, reaching 2.80 million tons by 2027. Indian beef exports increase from 1.85 million tons in 2018 to 2.31 million tons by 2027. Expanded market access for Brazilian beef should enable it to outpace Indian beef exports by 2019. Developing countries' demand for India's lower priced beef is projected to continue rising rapidly. Australia is the third-largest beef exporter, historically among the top tier, with projected exports increasing to 1.61 million tons by 2027, adding 87,000 tons to world exports. Australia's beef herd will move into the rebuilding phase under the assumption of normal weather. The United States remains the fourth-largest beef exporter throughout the projection period, providing mainly higher valued cuts of grain-fed beef to a number of countries. U.S. beef exports increase by 2,720 tons over the projection period, reaching 1.35 million tons by 2027.
- The EU, the United States, Canada, and Brazil are the world's largest pork exporters. EU pork exports increase by 582,000 tons over the projection period, reaching 3.4 million tons by 2027. U.S. pork exports expand by almost 18 percent over the projection period, increasing from 2.68 million tons in 2018 to 3.15 million tons by 2027. Canada's pork exports reach 1.47 million tons by 2027, adding 128,000 tons over the projection period.

Global Beef imports ¹

Million metric tons



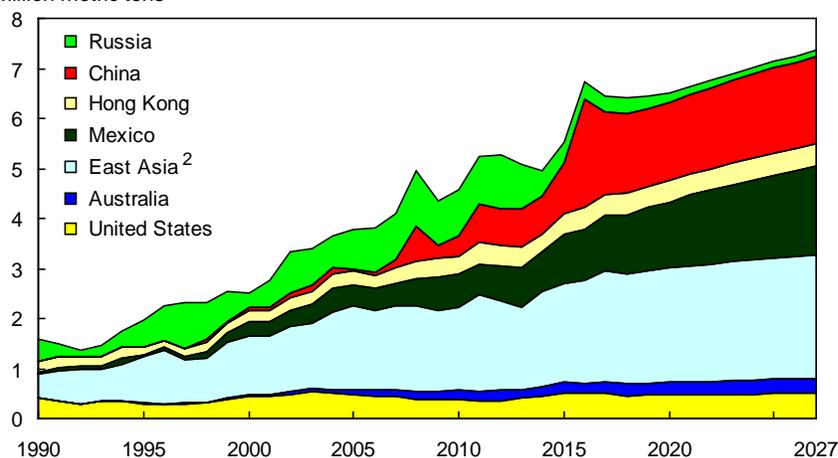
¹ Selected importers, not world total. ² Japan, Korea, & Taiwan.

Between 2018 and 2027, imports by the major beef-importing countries are projected to increase by 1.8 million tons, reaching 9.37 million tons in 2027. Increased imports by lower and middle income countries will fuel much of the increase in lower-value grass-fed beef. Imports of grain-fed beef, mainly by higher income countries, are projected to rise slowly.

- Russian beef imports are projected to decrease from 480,000 tons in 2018 to 455,000 tons by 2027. Russian beef imports fall over the projection period due to declining consumption and policies supporting domestic beef production.
- The combined beef imports by China and Hong Kong are projected to increase 49 percent in the coming decade to just over 2.1 million tons by 2027 due to rising demand for beef which outpaces domestic production growth. This increase accounts for the largest growth in imports among major beef-importing countries. China's beef imports increase from 1.02 million tons in 2018 to 1.6 million tons by 2027, becoming the world's largest importer by 2024.
- U.S. beef imports of primarily grass-fed, lean beef for use in ground beef and processed products gradually rise throughout the projection period. With beef imports up by 2 percent over the next decade, the United States is projected to be the world's second largest beef importer by the end of the projection period.
- The Middle East and North Africa region (including Egypt), with fast population and income growth, is projected to increase beef imports from 1.14 million tons in 2018 to over 1.53 million by 2027, at an average annual growth rate of 3.5 percent.
- Mexico will increase beef imports by 160,000 tons over the projection period. Much of these imports consist of higher valued, grain-fed beef from the United States. Mexico's beef imports will increase by 6.5 percent annually from 210,000 in 2018 to about 370,000 tons by 2027.
- Southeast Asia countries maintain strong income growth, leading to a 37 percent increase in their beef imports from 547,000 tons in 2018 and adding 204,000 tons to global import demand by 2027. Malaysia, Philippines, and Indonesia, exhibit the largest increase in imports over the projection period in Southeast Asia.

Global Pork imports ¹

Million metric tons



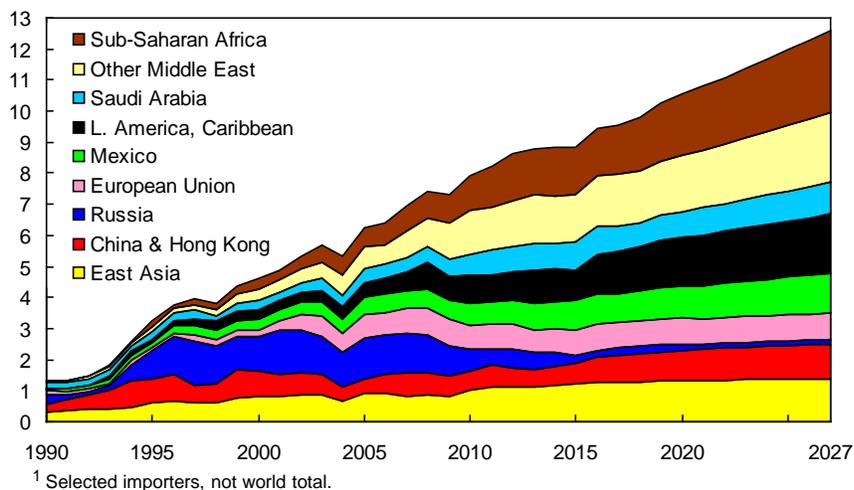
¹ Selected importers, not world total. ² Japan, Korea, & Taiwan.

Imports by major pork importing countries are projected to continue to rise, increasing by slightly over 1.3 million tons (17.3 percent) from 2018 to 2027. Mexico, the Philippines, China, and South Korea exhibit the largest increase in pork imports over the projection period, adding a combined 1.05 million tons of pork imports by 2027.

- China became the world's largest pork importer in 2016 and is projected to continue as the world's largest importer until Mexico surpasses China in 2027. China's annual pork imports have risen sharply since 2009 and are projected to increase by about 9 percent from 2018 to 2027 to almost 1.75 million tons. China increases pork imports by 146,000 tons over the projected decade.
- Mexico becomes the world's largest pork importer by 2027 surpassing China. Imports climb from 1.2 million tons in 2018 to 1.77 million tons by 2027. Income and population growth are the primary drivers of Mexico's rising pork demand. Mexico accounts for 43 percent of the projected increase in world pork imports among major importers.
- Japan is projected to be the third largest importer by 2027 after Mexico and China. Japan's pork imports increases by 99,600 tons over the projection period and reach 1.54 million tons by 2027. Japan's imports increase by 7 percent from 2018 through 2027, due to almost flat domestic production and slight growth in consumption.
- Russia's pork imports are projected to fall 58 percent from 2018 to 2027 reaching 125,000 tons. This decline largely reflects policies to stimulate domestic meat production and reduce reliance on imports.
- South Korea increases pork imports to satisfy demand for selected cuts, with imports rising by over 23 percent over the projection period to reach 807,000 tons, adding 151,700 tons to annual pork imports. The Philippines is projected to increase pork imports by 66 percent from 285,000 tons in 2018 to 474,000 tons by 2027.
- Increasing income and population growth drive strong demand for imported pork in Central America and the Caribbean. Imports rise by 106,000 tons or 45 percent over the coming decade, reaching 341,000 tons by 2027.

Global Poultry imports ¹

Million metric tons



Annual poultry meat imports by the major importing countries are projected to increase by 3.1 million tons (29 percent), reaching just over 13.9 million tons by 2027. Substantial growth is expected from emerging market nations in Sub-Saharan Africa, Middle East, Latin America, and Asian region. This includes countries such as Mexico, Saudi Arabia, Iraq, Philippines, and China. A decline in poultry meat imports is projected for Russia; slow import growth is projected for Japan, Canada, and the EU.

- Poultry meat imports by the regions of Africa and the Middle East are projected to grow by 56 percent and 30 percent, respectively, over the coming decade. By 2027, these regions together increase their poultry meat imports by almost 1.8 million tons. Projected gains in income and population boost demand, while ongoing animal-disease issues in a number of countries are expected to limit domestic production growth, thus leading to increased imports.
- Higher projected incomes in Mexico, Central America, and the Caribbean generate their growing poultry meat demand and imports. Imported poultry products remain less expensive than beef or pork, further stimulating demand. Mexico's poultry production continues to grow through the projection period, but at a slower rate than consumption, resulting in imports rising by about 321,000 tons (34 percent). Poultry imports by the Central America and Caribbean region rise by 269,000 tons (33 percent).
- Russia's substantial decline in poultry imports since 2014 is projected to continue, falling steadily over the projection period to 139,000 tons (a 38 percent decrease from 2018). The projections assume that Russian policies will stimulate domestic production and thereby limit imports.
- China's rising consumption of poultry meat is met primarily by domestic production, with imports accounting for only about 2 percent of consumption. However, China's poultry imports increase by 28 percent, reaching 659,000 tons by 2027. China became a net importer in 2016 and is projected to remain a net importer through 2027.
- Due to higher costs, fully cooked poultry products tend to be imported by higher income countries in Asia, Europe, and the Middle East. Fully cooked products are projected to account for most poultry exports from China and Thailand. Thailand's poultry meat exports to the EU, Japan, and South Korea are expected to rise because of the reopening of those markets to importing uncooked chicken imports from Thailand. Thai poultry exports increase to 1.19 million tons by 2027.

Table 26. Coarse grains trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
Former Soviet Union ¹	0.8	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
Other Europe	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0
European Union ²	15.4	16.6	17.1	16.9	16.5	16.2	16.0	15.8	15.5	15.2	15.0	14.8
Egypt	9.1	10.1	10.5	11.1	11.5	11.9	12.3	12.8	13.1	13.6	14.1	14.6
Iran	10.0	11.3	12.5	13.3	13.8	14.2	14.6	15.0	15.3	15.6	15.9	16.1
Saudi Arabia	13.0	13.0	14.7	14.9	15.1	15.3	15.6	15.9	16.2	16.5	16.8	17.1
Turkey	1.7	1.1	1.7	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Other Middle East	7.3	6.4	6.7	6.8	7.0	7.2	7.3	7.4	7.6	7.8	8.0	8.1
Morocco	2.6	3.0	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.6	3.6	3.7
Other North Africa	8.6	9.4	9.7	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3
West Africa (ECOWAS) ³	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1
Sub-Saharan Africa ⁴	4.6	3.2	3.2	3.3	3.4	3.5	3.6	3.6	3.7	3.8	3.9	4.0
South Africa	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Japan	17.0	16.7	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.8	16.8	16.8
South Korea	9.3	9.8	10.0	10.2	10.3	10.4	10.5	10.6	10.6	10.7	10.7	10.8
Taiwan	4.3	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5
China	16.1	14.7	16.0	16.7	17.3	18.0	18.6	19.3	20.1	20.8	21.5	22.1
Indonesia	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Malaysia	3.5	4.0	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
Philippines	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Thailand	0.6	0.7	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2
Vietnam	8.1	8.5	9.2	9.6	10.0	10.4	10.9	11.3	11.8	12.2	12.7	13.1
Other Asia & Oceania	1.8	2.2	2.1	2.1	2.3	2.6	3.0	3.2	3.4	3.6	3.7	3.8
Canada	0.9	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.0
Mexico	15.2	16.9	18.1	19.1	19.5	20.5	21.3	21.9	22.5	23.0	23.7	24.2
Central America & Caribbean	6.4	6.9	7.3	7.4	7.6	7.8	8.0	8.1	8.3	8.6	8.8	9.0
Brazil	1.2	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Other South America	11.8	13.4	13.6	14.0	14.4	15.0	15.5	16.0	16.4	16.9	17.4	17.7
Other foreign ⁵	26.5	5.0	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
United States	4.1	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Total trade	203.0	187.4	195.2	200.2	203.6	208.5	213.3	217.6	221.7	226.1	230.6	234.5
<i>Exports, million metric tons</i>												
Exporters												
European Union ²	7.9	8.0	9.5	10.0	10.4	10.7	11.0	11.2	11.5	11.9	12.2	12.4
Other Europe	2.5	0.8	2.1	2.2	2.3	2.5	2.6	2.7	2.8	2.9	3.0	3.1
Russia	8.5	10.4	10.0	10.1	10.4	10.8	11.3	11.7	12.0	12.5	12.8	13.2
Ukraine	26.9	25.3	27.8	29.1	29.9	30.5	31.4	31.9	32.7	33.8	34.3	34.8
Other Former Soviet Union ⁶	1.1	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.4
Canada	4.8	4.8	5.0	5.5	5.7	6.0	6.1	6.3	6.4	6.5	6.7	6.8
Argentina	28.6	31.2	31.4	31.7	32.0	32.5	32.9	33.2	33.6	33.8	34.2	34.4
Brazil	36.0	34.0	35.6	36.0	36.2	37.1	38.7	40.2	41.2	42.2	43.3	44.8
Other South America	2.5	2.7	2.8	2.9	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.2
Australia	10.6	6.9	8.0	8.0	8.0	8.1	8.1	8.2	8.2	8.3	8.4	8.4
Other Asia and Oceania	3.5	3.1	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.9	2.9	2.9
South Africa	2.5	1.7	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.2	2.3
Other Africa ⁷	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other foreign	1.7	1.8	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
United States	64.5	54.4	54.3	55.8	56.6	58.0	58.7	59.5	60.2	61.0	62.4	63.2
<i>Percent</i>												
U.S. trade share	31.8	29.0	27.8	27.9	27.8	27.8	27.5	27.3	27.2	27.0	27.1	26.9

¹FSU-12. Includes intra-FSU trade.²Excludes intra-EU trade.³Economic Community of West African States, 15 member countries (ECOWAS).⁴Excludes ECOWAS and South Africa.⁵Includes unaccounted, which can be negative.⁶Covers FSU-12 except for Russia and Ukraine. Includes intra-FSU trade.⁷Includes all African countries except South Africa.

The projections were completed in November 2017.

Table 27. Corn trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
	<i>Imports, million metric tons</i>											
Importers												
European Union ¹	14.8	16.0	16.5	16.3	15.9	15.6	15.4	15.2	14.9	14.6	14.4	14.2
Former Soviet Union ²	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Egypt	9.0	10.0	10.4	11.0	11.4	11.8	12.2	12.6	13.0	13.5	14.0	14.4
Morocco	2.1	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1	3.1	3.2
Other North Africa	5.9	6.8	7.0	7.2	7.3	7.6	7.8	8.1	8.3	8.5	8.8	9.1
Iran	8.5	10.0	11.2	11.9	12.4	12.7	13.1	13.4	13.7	14.0	14.2	14.4
Saudi Arabia	3.5	4.5	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0
Turkey	1.4	1.0	1.5	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Other Middle East	4.6	4.3	4.3	4.3	4.4	4.5	4.5	4.6	4.7	4.7	4.8	4.9
Japan	15.2	15.0	15.1	15.2	15.2	15.1	15.1	15.1	15.1	15.1	15.0	15.0
South Korea	9.2	9.7	9.9	10.1	10.2	10.3	10.4	10.5	10.5	10.6	10.6	10.7
Taiwan	4.2	4.5	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4
China	2.5	3.0	3.5	4.0	4.3	4.8	5.2	5.7	6.2	6.7	7.1	7.5
Indonesia	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Malaysia	3.5	4.0	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
Philippines	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
Thailand	0.6	0.7	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2
Vietnam	8.1	8.5	9.2	9.6	10.0	10.4	10.9	11.3	11.8	12.2	12.7	13.1
Other Asia & Oceania	0.6	0.8	0.7	0.7	0.8	1.0	1.2	1.4	1.5	1.6	1.6	1.7
Canada	0.9	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Mexico	14.5	16.5	17.7	18.5	18.9	19.8	20.6	21.2	21.7	22.3	23.0	23.5
Central America & Caribbean	6.4	6.9	7.1	7.2	7.4	7.7	7.9	8.1	8.3	8.5	8.7	8.9
Brazil	0.5	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Other South America	11.2	12.6	12.8	13.2	13.6	14.1	14.6	15.0	15.4	15.9	16.3	16.7
South Africa	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
West Africa (ECOWAS) ³	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1
Sub-Saharan Africa ⁴	3.9	2.5	2.6	2.7	2.7	2.8	2.9	3.0	3.0	3.1	3.2	3.3
Other foreign ⁵	28.6	7.0	4.8	4.9	4.9	4.8	4.8	4.8	4.8	4.8	4.8	4.9
United States	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total trade	163.6	151.6	156.7	160.8	163.4	167.4	171.5	175.0	178.2	181.8	185.6	188.8
	<i>Exports, million metric tons</i>											
Exporters												
European Union ¹	2.0	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Argentina	25.5	29.0	29.4	29.7	30.2	30.6	31.1	31.4	31.7	31.9	32.3	32.5
Brazil	36.0	34.0	35.6	36.0	36.2	37.1	38.7	40.2	41.2	42.2	43.3	44.8
Other South America	2.3	2.6	2.7	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.0
South Africa	2.5	1.7	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.2	2.3
Other Africa	1.0	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Other Europe	2.5	0.7	2.0	2.1	2.2	2.4	2.5	2.6	2.7	2.8	2.9	2.9
Ukraine	21.3	20.5	23.2	24.7	25.5	26.1	27.0	27.5	28.3	29.5	30.0	30.5
Former Soviet Union ²	5.7	5.8	5.7	5.9	6.1	6.4	6.7	6.9	7.0	7.3	7.5	7.6
Other foreign	6.5	5.8	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.2	6.3	6.4
United States	58.2	48.9	48.3	49.5	50.2	51.4	52.1	52.7	53.3	54.0	55.2	55.9
	<i>Percent</i>											
U.S. trade share	35.6	32.3	30.8	30.8	30.7	30.7	30.4	30.1	29.9	29.7	29.8	29.6

¹Excludes intra-EU trade.²FSU-11, excludes Ukraine. Includes intra-FSU trade.³Economic Community of West African States, 15 member countries (ECOWAS).⁴Excludes South Africa and ECOWAS⁵Includes unaccounted, which can be negative.

The projections were completed in November 2017.

Table 28. Sorghum trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
Japan	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
Mexico	0.5	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
South America	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
Sub-Saharan Africa ¹	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
China	5.2	5.0	5.3	5.5	5.7	5.8	6.0	6.1	6.3	6.5	6.6	6.8
Other ²	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
Total trade	7.6	7.2	7.8	8.1	8.3	8.5	8.7	8.9	9.2	9.4	9.6	9.7
<i>Exports, million metric tons</i>												
Exporters												
Argentina	0.4	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8
Australia	0.6	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3
Other foreign	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
United States	6.1	5.3	5.8	6.1	6.2	6.4	6.5	6.6	6.7	6.9	7.0	7.1
<i>Percent</i>												
U.S. trade share	80.0	74.2	74.8	75.0	74.7	74.4	74.1	73.9	73.4	73.3	73.1	73.0

¹Includes South Africa.²Includes unaccounted.

The projections were completed in November 2017.

Table 29. Barley trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
Former Soviet Union ¹	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
Europe	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Japan	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
China	8.1	6.5	6.9	7.0	7.0	7.1	7.1	7.2	7.3	7.3	7.4	7.4
Brazil	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Latin America ²	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
Saudi Arabia	9.5	8.5	9.6	9.7	9.8	9.9	10.1	10.3	10.4	10.6	10.9	11.0
Iran	1.5	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7
Turkey	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other Middle East	2.5	1.9	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9
Morocco	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Other North Africa	2.6	2.6	2.6	2.7	2.8	2.9	2.9	3.0	3.0	3.1	3.2	3.2
Other foreign ³	0.3	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
United States	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total trade	28.8	25.6	27.5	27.9	28.3	28.8	29.3	29.7	30.2	30.7	31.2	31.6
<i>Exports, million metric tons</i>												
Exporters												
European Union ⁴	5.7	6.2	7.6	8.1	8.4	8.7	8.9	9.2	9.5	9.8	10.1	10.3
Argentina	2.7	1.6	1.5	1.4	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2
Australia	9.5	5.8	6.8	6.8	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8
Canada	1.5	1.5	1.5	1.7	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.7
Russia	2.9	4.8	4.4	4.3	4.5	4.6	4.8	5.0	5.2	5.4	5.6	5.8
Ukraine	5.4	4.6	4.4	4.2	4.3	4.2	4.3	4.2	4.2	4.1	4.1	4.1
Other Former Soviet Union ⁵	0.9	0.7	0.8	0.9	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1
Turkey	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other foreign	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
United States	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<i>Percent</i>												
U.S. trade share	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3

¹FSU-12. Includes intra-FSU trade.²Includes Mexico.³Includes unaccounted.⁴Excludes intra-EU trade.⁵FSU-12 except Russia and Ukraine. Includes intra-FSU trade.

The projections were completed in November 2017.

Table 30. Wheat trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
Iran	1.2	0.5	2.6	2.2	2.0	1.8	1.7	1.6	1.6	1.6	1.5	1.5
Iraq	2.4	3.5	3.6	3.8	3.8	4.1	4.2	4.4	4.6	4.8	5.0	5.2
Turkey	4.5	4.5	4.7	4.9	5.0	5.0	5.1	5.2	5.2	5.3	5.4	5.4
Saudi Arabia	3.7	3.8	3.9	3.9	4.1	4.1	4.2	4.3	4.4	4.5	4.6	4.7
Other Middle East	11.5	11.7	12.5	12.8	13.0	13.3	13.6	13.8	14.1	14.3	14.6	14.8
Morocco	5.2	4.8	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.7
Egypt	11.2	12.0	11.9	12.3	12.8	13.1	13.3	13.6	13.9	14.1	14.4	14.7
Other North Africa	11.9	11.6	11.6	11.7	11.7	11.9	12.0	12.1	12.2	12.3	12.3	12.4
Nigeria	5.0	5.1	5.1	5.3	5.4	5.6	5.8	6.0	6.1	6.2	6.4	6.6
Other West Africa (ECOWAS) ¹	3.9	4.0	4.2	4.3	4.4	4.6	4.7	4.9	5.0	5.2	5.3	5.5
South Africa	1.1	1.9	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0
Other Sub-Saharan Africa ²	12.3	13.0	13.4	14.2	14.8	15.4	16.0	16.5	17.1	17.7	18.4	19.1
Mexico	5.4	5.4	5.5	5.6	5.7	5.8	5.9	5.9	6.0	6.0	6.1	6.2
Cuba	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Central America & Caribbean	3.3	3.3	3.3	3.4	3.4	3.5	3.5	3.5	3.6	3.6	3.7	3.7
Brazil	7.3	7.5	7.5	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Other South America	8.5	8.6	8.6	8.8	8.9	8.9	9.0	9.1	9.3	9.4	9.6	9.8
European Union ³	5.3	6.5	6.2	6.2	6.3	6.2	6.2	6.1	6.1	6.0	6.0	5.9
Other Europe	2.0	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8
Former Soviet Union ⁴	7.4	8.0	8.1	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1
China	4.4	3.0	3.2	3.5	3.6	3.7	3.9	4.0	4.1	4.2	4.4	4.5
Hong Kong	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Japan	5.9	5.8	5.7	5.7	5.7	5.6	5.6	5.6	5.6	5.6	5.5	5.5
South Korea	4.7	4.6	4.6	4.7	4.7	4.8	4.8	4.9	4.9	5.0	5.0	5.0
Taiwan	1.4	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6
India	5.9	3.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Pakistan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bangladesh	5.6	6.5	6.7	6.9	7.2	7.4	7.6	7.9	8.1	8.3	8.6	8.8
Philippines	5.7	5.7	5.6	5.7	6.0	6.1	6.3	6.4	6.5	6.6	6.7	6.9
Indonesia	10.2	10.5	10.6	10.8	10.9	11.1	11.4	11.6	11.8	12.1	12.3	12.6
Malaysia	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.2	2.2
Thailand	3.7	3.0	3.0	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
Vietnam	5.5	4.0	3.8	3.9	4.0	4.0	4.1	4.1	4.2	4.2	4.3	4.3
Other Asia & Oceania	6.1	6.3	6.5	6.7	6.9	7.0	7.1	7.2	7.4	7.6	7.7	7.9
Other foreign ⁵	4.2	2.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
United States	3.2	4.1	3.7	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3
Total trade	182.9	180.7	182.4	186.0	189.3	192.6	195.6	198.8	201.9	204.9	208.5	212.1
<i>Exports, million metric tons</i>												
Exporters												
European Union ³	27.3	28.5	32.9	33.8	34.7	35.4	35.8	36.4	37.2	37.6	38.7	39.7
Canada	20.2	21.0	20.9	21.1	21.4	21.6	21.9	22.3	22.6	22.9	23.2	23.5
Australia	22.6	17.5	18.8	18.8	18.9	19.0	19.4	19.5	19.6	19.8	20.0	20.3
Argentina	13.3	11.7	12.5	13.1	13.5	13.9	14.3	14.8	15.1	15.5	16.0	16.4
Russia	27.8	33.0	28.4	29.1	30.0	30.7	31.1	31.5	32.1	32.6	33.3	33.9
Ukraine	18.1	16.5	17.4	17.9	18.4	18.9	19.4	19.9	20.3	20.8	21.2	21.8
Other Former Soviet Union ⁶	8.5	8.5	9.3	9.4	9.6	9.6	9.6	9.8	10.0	10.1	10.2	10.4
Other Europe	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
India	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	0.7	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Turkey	6.2	6.5	5.7	5.9	6.1	6.2	6.4	6.5	6.6	6.7	6.8	7.0
Other foreign	7.5	7.7	8.4	8.5	8.5	8.6	8.7	8.8	8.9	9.0	9.0	9.1
United States	28.7	27.2	25.9	26.1	26.1	26.4	26.7	26.9	27.2	27.5	27.5	27.5
<i>Percent</i>												
U.S. trade share	15.7	15.1	14.2	14.0	13.8	13.7	13.6	13.6	13.5	13.4	13.2	13.0

¹Economic Community of West African States (ECOWAS) except Nigeria, 14 remaining member countries.

²Excludes South Africa, Nigeria, and other West Africa.

³Excludes intra-EU trade.

⁴FSU-12. Includes intra-FSU trade.

⁵Includes unaccounted, which can be negative.

⁶FSU-12 except for Russia and Ukraine. Includes intra-FSU trade.

The projections were completed in November 2017.

Table 31. Rice trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
	<i>Imports, million metric tons</i>											
Importers												
Canada	0.37	0.37	0.38	0.38	0.38	0.39	0.39	0.39	0.40	0.40	0.41	0.41
Mexico	0.86	0.85	0.86	0.87	0.88	0.90	0.91	0.93	0.95	0.96	0.98	1.00
Cuba	0.52	0.58	0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.53
Central America/Caribbean	1.32	1.26	1.34	1.39	1.43	1.46	1.49	1.52	1.56	1.59	1.61	1.64
Brazil	0.60	0.63	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Other South America	1.09	1.06	0.98	1.00	1.00	1.01	1.03	1.06	1.09	1.12	1.15	1.18
European Union ¹	1.85	1.90	2.01	2.07	2.13	2.20	2.27	2.34	2.38	2.43	2.48	2.53
Former Soviet Union ²	0.56	0.54	0.54	0.55	0.56	0.56	0.56	0.56	0.55	0.55	0.54	0.54
Other Europe	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.16	0.16
Bangladesh	0.07	1.70	0.85	0.73	0.71	0.72	0.73	0.73	0.74	0.74	0.75	0.76
China	5.30	5.25	5.32	5.28	5.22	5.15	5.10	5.05	5.00	4.95	4.90	4.85
Japan	0.69	0.69	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
South Korea	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Indonesia	0.50	0.50	0.58	0.60	0.61	0.61	0.62	0.62	0.63	0.63	0.64	0.64
Malaysia	1.00	0.90	0.96	0.97	0.98	0.99	1.00	1.01	1.01	1.02	1.02	1.02
Philippines	1.10	1.70	1.64	1.60	1.60	1.60	1.61	1.62	1.63	1.67	1.69	1.71
Other Asia & Oceania	3.50	3.31	3.07	3.09	3.08	3.08	3.09	3.10	3.10	3.11	3.11	3.12
Iraq	1.05	1.10	1.13	1.17	1.20	1.24	1.28	1.31	1.34	1.38	1.42	1.46
Iran	1.60	1.30	1.43	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.60	1.61
Saudi Arabia	1.40	1.45	1.51	1.56	1.60	1.64	1.68	1.73	1.76	1.80	1.84	1.88
Other N. Africa & M. East	3.19	3.19	3.38	3.48	3.57	3.64	3.72	3.79	3.87	3.94	4.02	4.10
Nigeria	2.40	2.30	2.43	2.55	2.65	2.73	2.81	2.91	3.00	3.08	3.17	3.24
Other West Africa (ECOWAS) ³	5.82	6.29	6.47	6.65	6.82	6.97	7.13	7.30	7.50	7.70	7.88	8.03
Other Sub-Saharan Africa ⁴	3.99	4.22	4.37	4.54	4.76	4.94	5.12	5.27	5.46	5.64	5.79	5.95
South Africa	1.00	0.95	0.98	0.99	1.00	1.02	1.04	1.05	1.07	1.09	1.10	1.12
Other foreign ⁵	4.28	1.58	2.48	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.48	2.47
United States	0.74	0.78	0.78	0.79	0.79	0.80	0.80	0.81	0.81	0.81	0.82	0.82
Total imports	45.34	44.91	45.97	46.67	47.41	48.10	48.85	49.59	50.36	51.16	51.87	52.58
	<i>Exports, million metric tons</i>											
Exporters												
Australia	0.22	0.35	0.39	0.40	0.41	0.42	0.42	0.44	0.45	0.46	0.47	0.48
Argentina	0.48	0.45	0.47	0.48	0.48	0.48	0.49	0.50	0.50	0.51	0.52	0.52
Other South America	2.78	2.59	2.71	2.95	3.14	3.25	3.35	3.44	3.55	3.64	3.73	3.84
European Union ¹	0.32	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
China	0.81	1.10	1.23	1.29	1.40	1.51	1.61	1.73	1.85	1.96	2.02	2.10
India	11.00	11.60	11.83	11.91	12.06	12.18	12.31	12.42	12.55	12.70	12.75	12.84
Pakistan	3.60	3.80	3.76	3.82	3.74	3.75	3.73	3.68	3.66	3.63	3.60	3.58
Thailand	11.00	10.20	10.30	10.33	10.36	10.40	10.46	10.57	10.72	10.86	11.02	11.19
Vietnam	6.20	6.30	6.54	6.61	6.70	6.81	6.99	7.14	7.22	7.38	7.54	7.67
Burma	2.80	2.60	2.59	2.66	2.77	2.86	2.97	3.08	3.18	3.27	3.37	3.46
Cambodia	1.35	1.25	1.30	1.32	1.40	1.46	1.51	1.56	1.60	1.65	1.70	1.75
Egypt	0.10	0.10	0.19	0.19	0.19	0.19	0.18	0.18	0.17	0.16	0.15	0.14
Other foreign	0.99	0.99	0.95	0.96	0.97	0.97	0.98	0.99	0.99	0.99	1.00	1.00
United States	3.70	3.30	3.43	3.48	3.51	3.54	3.57	3.60	3.65	3.68	3.71	3.73
Total exports	45.34	44.91	45.97	46.67	47.41	48.10	48.85	49.59	50.36	51.16	51.87	52.58
	<i>Percent</i>											
U.S. trade share	8.2	7.4	7.5	7.5	7.4	7.4	7.3	7.3	7.3	7.2	7.2	7.1

¹Excludes intra-EU trade.²FSU-12. Includes intra-FSU trade.³Economic Community of West African States (ECOWAS) except Nigeria, 14 remaining member countries.⁴Excludes South Africa, Nigeria, and other West Africa.⁵Includes unaccounted.

The projections were completed in November 2017.

Table 32. Soybean trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
European Union ¹	13.2	14.0	13.6	13.8	13.8	13.8	13.7	13.7	13.7	13.6	13.6	13.6
Former Soviet Union ²	2.2	1.8	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.3	1.3
Mexico	4.1	4.3	4.4	4.5	4.6	4.7	4.7	4.8	4.9	5.0	5.1	5.2
South America	3.0	2.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Central Amer & Caribbean	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
Egypt	2.3	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0
Iran	2.1	2.3	2.3	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.0	3.1
Saudi Arabia	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Turkey	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.7	2.8
Other Middle East	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Africa	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
Pakistan	1.7	2.0	2.1	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3.0	3.1
China	93.5	97.0	101.8	105.9	109.7	113.5	118.5	124.1	128.8	133.5	138.1	143.0
Japan	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
South Korea	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Taiwan	2.6	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6
Malaysia	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0
Indonesia	2.7	2.6	2.7	2.8	2.9	2.9	3.0	3.1	3.2	3.2	3.3	3.4
Vietnam	1.7	1.9	2.1	2.1	2.2	2.3	2.4	2.4	2.5	2.6	2.6	2.7
Thailand	3.1	3.2	3.3	3.3	3.4	3.5	3.5	3.6	3.7	3.8	3.9	4.0
Other	5.8	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.4
Total imports	147.7	152.4	157.0	162.0	166.5	171.0	176.7	183.0	188.4	193.9	199.2	204.8
<i>Exports, million metric tons</i>												
Exporters												
Argentina	7.0	8.0	8.7	9.5	10.1	10.7	11.4	12.0	12.6	13.1	13.6	14.1
Brazil	63.1	65.0	66.4	69.3	71.1	73.4	77.1	81.4	85.3	89.1	92.7	96.4
Other South America ³	9.5	8.8	8.8	9.5	9.9	10.3	10.8	11.1	11.5	11.9	12.3	12.7
Ukraine	2.9	2.5	2.6	2.8	2.9	3.1	3.2	3.3	3.4	3.4	3.6	3.6
Canada	4.6	5.8	6.1	6.2	6.5	6.7	6.9	7.1	7.3	7.6	7.8	8.1
Other foreign	1.3	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5
United States	59.2	61.2	63.3	63.5	64.8	65.6	66.0	66.7	67.0	67.4	67.8	68.4
Total exports	147.7	152.4	157.0	162.0	166.5	171.0	176.7	183.0	188.4	193.9	199.2	204.8
<i>Percent</i>												
U.S. trade share	40.1	40.2	40.3	39.2	38.9	38.4	37.4	36.4	35.5	34.7	34.0	33.4

¹Excludes intra-EU trade.²Covers FSU-12. Includes intra-FSU trade.³Covers South America, excludes Argentina and Brazil.

The projections were completed in November 2017.

Table 33. Soybean meal trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
European Union ¹	18.9	19.4	19.6	19.5	19.6	19.7	19.8	19.8	19.9	20.0	20.1	20.1
Russia	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Other Former Soviet Union ²	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Other Europe	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Canada	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Japan	1.6	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1
South Korea	1.8	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4
Indonesia	4.3	4.5	4.6	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4
Malaysia	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.2
Philippines	2.5	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.5	3.6	3.7
Thailand	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.2	3.2
Vietnam	4.9	5.2	5.7	6.0	6.4	6.7	7.1	7.4	7.8	8.2	8.6	9.0
Other Asia & Oceania	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.5	2.5	2.6	2.7
Mexico	2.0	2.4	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.9
Central Amer & Caribbean	1.9	2.0	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.6
South America	5.0	5.3	5.6	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4
Egypt	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.6	1.6
Iran	1.6	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.5	2.5
Saudi Arabia	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3
Other Middle East ³	4.6	4.8	5.1	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.2	6.3
Other North Africa ⁴	2.4	2.4	2.6	2.6	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.4
Other	6.1	5.1	5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.2
Total imports	65.0	67.2	69.5	70.3	71.8	73.1	74.5	75.9	77.4	79.0	80.4	81.9
<i>Exports, million metric tons</i>												
Exporters												
Argentina	31.6	31.2	33.2	33.6	34.5	35.3	36.0	36.7	37.4	38.1	38.8	39.5
Brazil	13.8	15.3	15.4	15.6	16.0	16.5	17.0	17.6	18.2	19.1	19.7	20.3
Other South America	3.8	4.3	4.3	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5
China	1.1	1.4	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
India	2.0	1.7	1.7	1.9	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2
European Union ¹	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other foreign	1.8	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0
United States	10.5	11.1	11.2	11.2	11.2	11.2	11.2	11.3	11.3	11.4	11.4	11.5
Total exports	65.0	67.2	69.5	70.3	71.8	73.1	74.5	75.9	77.4	79.0	80.4	81.9
<i>Percent</i>												
U.S. trade share	16.2	16.5	16.2	15.9	15.6	15.3	15.1	14.9	14.7	14.4	14.2	14.0

¹Excludes intra-EU trade.²Covers FSU-12 minus Russia. Includes intra-FSU trade.³Middle East excluding Saudi Arabia and Iran.⁴North Africa excluding Egypt.

The projections were completed in November 2017.

Table 34. Soybean oil trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million metric tons</i>												
Importers												
China	0.7	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.2	1.3	1.4	1.5
India	3.4	4.1	4.0	4.1	4.2	4.3	4.5	4.6	4.7	4.8	4.9	5.1
Bangladesh	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
Pakistan	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
South East Asia	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Other Asia & Oceania	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Mexico	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Central Amer & Caribbean	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
South America	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.7
Iran	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Egypt	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5
Other North Africa ¹	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7
European Union ²	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other	1.3	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Total imports	11.4	11.8	12.1	12.4	12.8	13.1	13.5	13.8	14.2	14.6	15.0	15.4
<i>Exports, million metric tons</i>												
Exporters												
Argentina	5.5	5.9	6.1	6.4	6.5	6.6	6.8	6.9	7.0	7.1	7.2	7.4
Brazil	1.2	1.5	1.5	1.5	1.6	1.7	1.8	2.0	2.1	2.3	2.5	2.7
Other South America	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
European Union ²	0.9	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1
Former Soviet Union -12	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Other foreign	1.0	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1
United States	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2
Total exports	11.4	11.8	12.1	12.4	12.8	13.1	13.5	13.8	14.2	14.6	15.0	15.4
<i>Percent</i>												
U.S. trade share	10.2	8.1	7.9	7.7	7.8	7.9	7.8	7.9	7.9	7.9	7.9	7.7

¹Excludes Egypt.²Excludes intra-EU trade.

The projections were completed in November 2017.

Table 35. All cotton trade long-term projections

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
<i>Imports, million bales</i>												
Importers												
European Union ¹	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4
Former Soviet Union ²	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Mexico	1.0	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6
Japan	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
South Korea	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
China	5.0	5.3	7.0	10.0	12.0	14.0	17.5	18.5	18.7	19.0	19.2	19.5
Indonesia	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5
Vietnam	5.5	6.5	7.1	7.5	7.8	8.2	9.0	9.4	9.7	10.1	10.4	10.8
Thailand	1.2	1.3	1.4	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0
Pakistan	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.9
India	2.7	1.6	1.5	1.4	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0
Bangladesh	6.7	7.3	7.6	7.7	7.9	8.3	8.8	9.1	9.3	9.6	9.8	10.1
Taiwan	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Other Asia & Oceania	0.6	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Turkey	3.7	3.4	3.5	3.5	3.5	3.5	3.6	3.7	3.7	3.7	3.8	3.9
Other	2.0	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Total imports	37.2	38.0	40.7	43.6	45.8	48.2	53.2	54.7	55.3	56.0	56.7	57.4
<i>Exports, million bales</i>												
Exporters												
Former Soviet Union ²	2.8	2.3	2.8	2.9	3.0	3.1	3.5	3.6	3.6	3.7	3.9	4.0
Australia	3.7	4.1	4.4	4.8	5.1	5.6	6.4	6.5	6.5	6.6	6.8	6.8
Argentina	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5
Brazil	2.8	3.8	4.2	4.8	5.6	6.1	7.0	7.5	7.7	7.8	7.8	7.9
Other Latin America	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Pakistan	0.1	0.3	0.3	0.6	0.6	0.8	1.0	1.1	1.1	1.2	1.3	1.3
India	4.5	4.6	5.2	6.1	6.7	7.3	8.6	8.9	8.8	8.7	8.7	8.7
Egypt	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
West Africa (ECOWAS) ³	3.7	4.0	4.1	4.9	5.3	5.6	6.2	6.4	6.5	6.5	6.5	6.5
Other Sub-Saharan Africa ⁴	1.8	1.4	1.6	1.8	1.9	1.9	2.1	2.1	2.2	2.2	2.2	2.3
Other foreign	2.2	2.3	2.2	2.3	2.4	2.5	2.8	2.9	3.0	3.1	3.2	3.3
United States	14.9	14.5	15.2	14.3	14.3	14.3	14.4	14.5	14.7	14.9	15.2	15.5
Total exports	37.2	38.0	40.7	43.6	45.8	48.2	53.2	54.7	55.3	56.0	56.7	57.4
<i>Percent</i>												
U.S. trade share	40.1	38.1	37.2	32.9	31.3	29.7	27.0	26.5	26.5	26.7	26.8	26.9

¹Excludes intra-EU trade.²Covers FSU-12, including intra-FSU trade.³Economic Community of West African States, 15 countries (ECOWAS)⁴Includes South Africa.

The projections were completed in November 2017.

Table 36. Beef trade long-term projections

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Imports, thousand metric tons, carcass weight</i>												
Importers												
Japan	719	780	815	825	826	826	827	828	829	830	831	832
South Korea	513	550	560	574	596	613	629	646	659	679	697	715
Taiwan	154	157	160	165	167	169	172	175	178	181	184	187
Indonesia	90	94	98	104	108	113	118	124	129	134	140	146
Malaysia	205	210	218	227	236	246	256	267	277	288	299	311
Philippines	163	175	185	195	202	209	215	221	227	234	239	247
China	818	925	1,025	1,120	1,189	1,240	1,302	1,373	1,434	1,485	1,554	1,606
Hong Kong	453	425	410	415	427	441	455	469	482	497	511	526
Other Asia	170	172	179	193	199	212	221	232	249	257	273	285
European Union ¹	369	340	360	356	353	352	354	353	353	353	353	351
Other Europe	123	126	127	131	136	141	145	150	153	156	161	164
Russia	522	520	480	468	469	469	462	456	454	454	453	455
Egypt	340	250	280	296	313	323	340	351	365	375	388	401
Other N. Africa & M. East	833	840	855	887	916	941	982	1,010	1,039	1,071	1,092	1,127
Mexico	188	205	210	217	229	245	265	285	305	327	349	370
Canada	254	225	235	236	237	238	238	239	240	241	242	243
United States	1,368	1,345	1,374	1,324	1,340	1,347	1,359	1,377	1,394	1,401	1,403	1,402
Major importers	7,282	7,339	7,571	7,732	7,942	8,124	8,341	8,557	8,765	8,964	9,171	9,367
<i>Exports, thousand metric tons, carcass weight</i>												
Exporters												
Australia	1,480	1,450	1,525	1,576	1,607	1,609	1,609	1,606	1,605	1,610	1,607	1,612
New Zealand	587	570	570	565	563	569	582	591	599	606	611	615
Former Soviet Union ²	272	231	261	290	268	262	271	282	297	313	327	339
India	1,764	1,825	1,850	1,837	1,891	1,953	2,028	2,097	2,148	2,206	2,263	2,309
Other Asia	185	185	191	195	200	206	212	215	218	221	225	230
European Union ¹	344	400	420	421	421	422	419	419	419	420	422	424
Argentina	216	280	350	410	446	465	473	483	494	501	512	517
Brazil	1,698	1,760	1,825	2,085	2,158	2,221	2,310	2,403	2,508	2,595	2,699	2,799
Other Latin America	1,009	1,001	665	429	481	499	734	747	721	733	736	759
Canada	443	475	475	451	434	429	429	431	434	434	434	434
United States	1,159	1,295	1,347	1,248	1,240	1,275	1,310	1,324	1,330	1,342	1,347	1,350
Major exporters	9,157	9,472	9,479	9,507	9,708	9,911	10,378	10,597	10,771	10,981	11,183	11,387

¹Excludes intra-EU trade.²FSU-12. Includes intra-FSU trade.

The projections were completed in November 2017.

Table 37. Pork trade long-term projections

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Imports, thousand metric tons, carcass weight</i>												
Importers												
Japan	1,361	1,440	1,435	1,459	1,483	1,491	1,507	1,512	1,519	1,527	1,529	1,535
China	2,181	1,650	1,600	1,550	1,555	1,569	1,615	1,647	1,683	1,702	1,721	1,746
Hong Kong	429	410	425	429	433	435	438	441	445	446	449	450
South Korea	615	680	655	676	697	712	726	742	761	775	789	807
Philippines	195	250	285	305	326	348	368	390	413	436	453	474
Australia	210	220	230	244	252	260	267	273	281	287	292	298
Russia	347	325	300	250	200	169	156	146	130	124	121	125
Other Former Soviet Union ¹	93	97	178	177	175	170	166	163	161	159	157	156
Other South America ²	214	278	322	330	336	342	348	353	360	367	372	377
Mexico	1,021	1,125	1,200	1,263	1,320	1,417	1,465	1,536	1,599	1,651	1,702	1,765
Central Am & Caribbean	189	215	235	247	262	272	283	294	307	319	330	341
Canada	215	220	225	229	235	240	245	249	255	260	265	269
United States	495	505	454	468	471	473	477	481	487	492	497	502
Major importers	7,565	7,415	7,544	7,626	7,743	7,897	8,060	8,228	8,400	8,544	8,676	8,846
<i>Exports, thousand metric tons, carcass weight</i>												
Exporters												
Brazil	832	810	830	852	869	898	919	945	970	985	1,002	1,029
Canada	1,320	1,330	1,350	1,352	1,358	1,375	1,387	1,404	1,417	1,443	1,459	1,478
Mexico	141	160	170	175	180	186	191	197	203	208	214	220
European Union ³	3,125	2,800	2,800	2,854	2,915	2,973	3,054	3,129	3,215	3,269	3,315	3,382
China	191	215	235	255	269	277	282	285	285	285	287	289
United States	2,376	2,535	2,676	2,729	2,783	2,836	2,889	2,942	2,996	3,049	3,102	3,155
Major exporters	7,985	7,850	8,061	8,217	8,375	8,545	8,722	8,902	9,086	9,239	9,379	9,553

¹Former Soviet Union excluding Russia. Includes intra-FSU trade.

²Excludes Argentina and Brazil.

³Excludes intra-EU trade.

The projections were completed in November 2017.

Table 38. Poultry trade long-term projections¹

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<i>Imports, thousand metric tons, ready to cook</i>												
Importers												
Russia	220	225	225	220	187	153	154	145	138	142	140	139
Other Former Soviet Union	516	586	625	656	679	703	723	740	757	774	791	807
European Union ²	864	824	826	840	845	843	844	845	848	850	851	853
Canada	137	138	144	145	146	148	149	151	152	154	155	157
Mexico	965	927	955	997	1,032	1,067	1,095	1,135	1,176	1,208	1,245	1,276
Central Amer & Caribbean	680	763	803	846	875	899	924	953	981	1,010	1,037	1,072
Japan	974	996	991	1,005	1,017	1,024	1,028	1,033	1,036	1,034	1,034	1,038
Hong Kong	345	390	400	413	422	429	437	443	449	456	462	468
China	464	485	515	534	551	567	583	599	614	629	643	659
South Korea	128	130	135	141	145	149	154	159	165	170	175	181
Philippines	250	276	287	315	334	351	371	389	405	421	438	457
Other Asia & Oceania	633	616	653	686	704	723	740	754	770	783	798	813
Saudi Arabia	924	820	781	816	842	869	895	919	943	969	994	1,017
Other Middle East	1,529	1,543	1,579	1,645	1,689	1,743	1,786	1,839	1,895	1,948	2,004	2,062
North Africa	129	137	146	157	167	179	191	203	214	225	235	246
West Africa (ECOWAS) ³	355	338	346	359	371	385	404	419	439	451	473	488
Other SubSaharan Africa	1,152	1,253	1,337	1,503	1,600	1,675	1,748	1,822	1,900	1,975	2,047	2,134
Major importers	10,265	10,447	10,748	11,278	11,607	11,904	12,223	12,548	12,883	13,195	13,523	13,866
<i>Exports, thousand metric tons, ready to cook</i>												
Exporters												
European Union ²	1,389	1,359	1,385	1,376	1,387	1,380	1,381	1,385	1,383	1,386	1,391	1,395
Former Soviet Union ⁴	486	560	580	597	620	643	669	694	720	747	775	804
Brazil	4,094	4,213	4,372	4,588	4,758	4,953	5,170	5,393	5,647	5,870	6,111	6,368
Other South America	307	331	348	360	363	367	372	376	382	385	391	397
China	386	400	385	375	371	368	366	362	360	358	357	356
Thailand	690	770	800	860	914	962	999	1,038	1,071	1,112	1,149	1,190
Turkey	301	366	381	371	372	379	383	389	393	398	403	408
United States	3,272	3,371	3,484	3,732	3,831	3,877	3,922	3,964	3,992	4,016	4,036	4,053
Major exporters	10,925	11,370	11,735	12,257	12,614	12,929	13,262	13,600	13,947	14,272	14,612	14,972

¹Broilers and turkeys only.²Excludes intra-EU trade.³Economic Community of West African States, 15 member countries (ECOWAS).⁴FSU-12. Includes intra-FSU trade.

The projections were completed in November 2017.

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